

ORIGINAL

NEW APPLICATION



0000204153

**BEFORE THE ARIZONA POWER PLANT
AND TRANSMISSION LINE SITING COMMITTEE**

IN THE MATTER OF THE APPLICATION
OF DCR TRANSMISSION, L.L.C. OR ITS
ASSIGNEES, IN CONFORMANCE WITH
THE REQUIREMENTS OF A.R.S. § 40-360
et. seq., FOR A CERTIFICATE OF
ENVIRONMENTAL COMPATIBILITY
AUTHORIZING THE CIELO AZUL 500 KV
SWITCHYARD PROJECT.

Arizona Corporation Commission

Docket No. L-21088A-21-0262-00191

Case No. _____

NOTICE OF FILING

DCR Transmission, L.L.C. ("DCRT" or "Applicant"), through undersigned counsel, provides notice of filing its Application for a Certificate of Environmental Compatibility ("CEC") seeking authority to construct a 500 kilovolt ("kV") Air Insulated Switchyard called the Cielo Azul switchyard ("Cielo Azul" or "the Project") and associated infrastructure to provide electrical interconnection for solar photovoltaic ("PV" or "Solar") and battery energy storage ("Storage") facilities connecting to the bulk transmission network via Ten West Link 500 kV transmission line ("Ten West Link"). Pursuant to Arizona Revised Statutes ("A.R.S.") §§40-360 through 40-360.13 and Arizona Administrative Code R14-3-201 through R14-3-219, enclosed are 25 copies of the Application. Pursuant to A.R.S. §40-360.09, the Applicant has provided the Utilities Division Staff the one thousand-dollar (\$1,000) filing fee applicable to this Project.

Communications concerning the Application (including data requests) should be addressed to:

Meghan Grabel
Osborn Maledon, PA
2929 N. Central Ave Suite 2100
Phoenix Arizona 85012

and

Arizona Corporation Commission

DOCKETED

JUL 15 2021

DOCKETED BY

DOCKET CONTROL
AZ CORP COMMISSION

2021 JUL 15 P 3:41

RECEIVED

OSBORN
MALEDON

A PROFESSIONAL ASSOCIATION
ATTORNEYS AT LAW

1 Ali Amirali
2 Starwood Energy Group
3 5 Greenwich Office Park
4 Greenwich, CT 06831

5 RESPECTFULLY SUBMITTED this 15th day of July, 2021.

6 OSBORN MALEDON, P.A.

7 
8

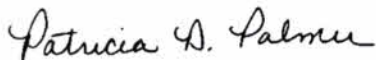
9 Meghan Grabel
10 Elias Ancharski
11 2929 N. Central Ave 21st Floor
12 Phoenix, Arizona 85012
13 mgrabel@omlaw.com
earcharski@omlaw.com
Attorneys for DCR Transmission, L.L.C.

14 Original and 25 copies of the foregoing
15 Filed this 15th day of July, 2021, with:

16 Docket Control
17 Arizona Corporation Commission
18 1200 West Washington Street
Phoenix, Arizona 85007

19 Copies of the foregoing hand delivered
20 this 15th day of July, 2021, to:

21 Thomas K. Chenal, Chairman
22 Arizona Power Plant and Transmission Line Siting Committee
23 Arizona Attorney General Office
24 15 South 15th Avenue
Phoenix, Arizona 85007

25 
26 _____
27
28

**BEFORE THE
ARIZONA POWER PLANT AND TRANSMISSION LINE SITING
COMMITTEE**

IN THE MATTER OF THE APPLICATION
OF DCR TRANSMISSION, L.L.C. OR ITS
ASSIGNEES, IN CONFORMANCE WITH
THE REQUIREMENTS OF A.R.S. § 40-360
et. seq., FOR A CERTIFICATE OF
ENVIRONMENTAL COMPATIBILITY
AUTHORIZING THE CIELO AZUL 500 KV
SWITCHYARD PROJECT.

Docket No. L-21088A-21-____-____

Case No. ____

**APPLICATION FOR
CERTIFICATE OF ENVIRONMENTAL
COMPATIBILITY**

APPLICATION FOR A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY

Cielo Azul 500 kV Switchyard Project

Prepared for

Arizona Power Plant and Transmission Line Siting Committee

Submitted by

DCR Transmission, L.L.C.

2021

Case No. _____

**BEFORE THE
ARIZONA POWER PLANT AND TRANSMISSION LINE SITING
COMMITTEE**

IN THE MATTER OF THE APPLICATION
OF DCR TRANSMISSION, L.L.C. OR ITS
ASSIGNEES, IN CONFORMANCE WITH
THE REQUIREMENTS OF A.R.S. § 40-360
et. seq., FOR A CERTIFICATE OF
ENVIRONMENTAL COMPATIBILITY
AUTHORIZING THE CIELO AZUL 500 KV
SWITCHYARD PROJECT.

Docket No. _____

Case No. _____

**APPLICATION FOR
CERTIFICATE OF ENVIRONMENTAL
COMPATIBILITY**

TABLE OF CONTENTS

EXECUTIVE SUMMARY	1
Introduction	1
Project Participants	2
Project History, Environmental Review and Public Outreach.....	2
Project Description and Proposed Route.....	4
Project Need and Benefits	4
Conclusion.....	4
APPLICATION FOR A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY.....	5
CONCLUSION	9

LIST OF EXHIBITS

Exhibit A: Location and Land Use Maps	A-1
A-1: Project Detail: Small Scale Map	
A-2: Project Detail: Large Scale Map	
A-3: Not Applicable	
A-4: Not Applicable	
Exhibit B: Environmental Studies	B-1
B-1: Biological Assessment	
B-2: U.S. Fish and Wildlife Service Biological Assessment Letter of Concurrence	
B-3: Environmental Assessment for the BLM La Paz County Land Conveyance (DOI-BLM-AZ-C020-2020-0004-EA).	
B-4: Arizona Game and Fish Department. Letter to Randy Schulze, CBX International on behalf of DCR Transmission, L.L.C., responding to request for Cielo Azul Project review. Dated June 4, 2021.	
Exhibit C: Areas of Biological Wealth.....	C-1
Exhibit D: Biological Resources.....	D-1
Exhibit E: Scenic Areas, Historic Sites and Structures, and Archaeological Sites	E-1
Exhibit F: Recreational Purposes and Aspects	F-1
Exhibit G: Concepts of Proposed Facilities.....	G-1
G-1: Proposed Steel Structure	
G-2: Switchyard General Arrangement	
Exhibit H: Existing Plans/Land Use.....	H-1
Exhibit I: Noise, Radio, and Television Interference	I-1
Exhibit J: Special Factors	J-1
J-1: La Paz County Administrator Confirmation of Zoning for Cielo Azul Project	
J-2: Screenshot of Cielo Azul Project Website	

LIST OF ACRONYMS AND ABBREVIATIONS

ACC	Arizona Corporation Commission
BLM	Bureau of Land Management
CAP	Central Arizona Project
CEC	Certificate of Environmental Compatibility
Committee	Arizona Power Plant and Transmission Line Siting Committee
CRIT	Colorado River Indian Tribes
DCRT	DCR Transmission, L.L.C.
EA	Environmental Assessment
EIS	Environmental Impact Statement
FEIS	Final Environmental Impact Statement
FERC	Federal Energy Regulatory Commission
I-10	Interstate 10
kV	Kilovolt
LGIA	Large Generator Interconnection Agreement
MW	Megawatt
NEPA	National Environmental Policy Act
OPGW	Optical ground wire
Project	A 500-kilovolt air insulated Cielo Azul switchyard comprising of six-bays with circuit breakers arranged in a breaker-and-a-half configuration, a control building with associated relays, and a microwave communication tower/system. The Cielo Azul switchyard will enable electrical interconnection for solar and energy storage facilities connecting to the bulk transmission network via the Ten West Link 500 kV transmission line at this location.
ROD	Record of Decision
ROW	Right-of-way
SCE	Southern California Edison Company
TES	Technical Environmental Study

EXECUTIVE SUMMARY

INTRODUCTION

DCR Transmission, L.L.C. (“DCRT” or “Applicant”) requests from the Arizona Power Plant and Transmission Line Siting Committee (“Committee”) a Certificate of Environmental Compatibility (“CEC”) for authority to construct a six-bay, 500 kilovolt (“kV”) six-bay air-insulated switchyard with circuit breakers arranged in a breaker-and-a-half configuration (called the Cielo Azul switchyard (“Cielo Azul” or “the Project”)), associated infrastructure and control building, and three 500 kV connections to the generation tie lines of the pending Atlas Solar project. The Project facilitates the electrical interconnection for solar and energy storage facilities in that area to the bulk transmission network via the Ten West Link 500 kV transmission line (“Ten West Link”). The Project is in La Paz County, Arizona, approximately 0.5 miles southeast of mile marker 58 on Interstate 10 (“I-10”). DCRT has secured a 55-acre Right-of-Way (“ROW”) from La Paz County for the proposed Project.

The ROW for this Project is part of the Bureau of Land Management’s (“BLM”) La Paz County Land Conveyance completed in 2019 under Section 1008 of the John D Dingell, Jr. Conservation, Management, and Recreation Act (Dingell Act), approved by the U.S. Congress to promote economic development in the county. La Paz County has leased the bulk of this land to the developer of the Atlas Solar project for the construction of one of the largest solar plus energy storage projects in North America. The Atlas Solar project is a proposed 3,200 megawatt (“MW”) solar plus 1,950 MW energy storage project that has executed a Federal Energy Regulatory Commission (“FERC”)-filed Large Generator Interconnection Agreement (“LGIA”) to interconnect with the Ten West Link. The Atlas Solar project is not part of the Project for which this application requests approval.

The purpose of the Project is to facilitate the interconnection of the Atlas Solar project and future generation projects proposing to interconnect to the bulk electric grid via the Ten West Link, thereby providing new, reliable, and cost-effective renewable energy to the southwestern United States.

The Project’s impact to the environment and ecology of Arizona will be minimal. The proposed location for the Project avoids sensitive environmental, cultural, and recreational areas and resources as documented in the previously completed National Environmental Policy Act (“NEPA”) studies, including the Environmental Impact Statement (“EIS”) for Ten West Link and the Environmental Assessment (“EA”) performed by the BLM for the La Paz County Land Conveyance (DOI-BLM-AZ-C020-2020-0004-EA). The Project is located within the 4,000-foot-wide study corridor that was evaluated for the Ten West Link EIS and within the La Paz County Land Conveyance that was evaluated in that action’s EA. In the NEPA evaluation relating to the EA for the land conveyance, the BLM determined that there

are no significant cultural, environmental, wildlife, or recreational resources within the conveyance parcel. The Project should therefore be approved pursuant to A.R.S. § 40-360.07(C).

PROJECT PARTICIPANTS

The Project is managed by DCRT, a joint venture led by Starwood Energy Group Global, Inc. (“Starwood Energy Group” or “Starwood Energy”). Starwood Energy Group, an affiliate of Starwood Capital, is a private investment firm based in Greenwich, CT that specializes in energy infrastructure investments, with a focus on renewable and fossil fuel power generation, transmission, energy storage, microgrids, renewable natural gas, vehicle electrification, and other energy related projects. Through the Starwood Energy Infrastructure Fund, including successor funds and affiliated investment vehicles, Starwood Energy has raised in excess of \$3 billion of equity capital and has executed transactions totaling more than \$7 billion in enterprise value, including \$2 billion related to the development and construction of renewable assets such as wind farms, solar farms and biomass power plants. The Starwood Energy team brings extensive development, construction, operations, acquisition, and financing expertise to its investments.

PROJECT HISTORY, ENVIRONMENTAL REVIEW AND PUBLIC OUTREACH

Project History

In 2019, the BLM transferred approximately 59,000 acres of BLM-administered land to La Paz County as mandated by Section 1008 of the Dingell Act to promote economic development in the county. La Paz County subsequently leased the bulk of this land to the developer of the Atlas Solar project for the construction of one of the largest solar plus energy storage projects in North America. The Cielo Azul Project is intended to facilitate the interconnection of the Atlas Solar project and future generation projects proposing to interconnect to the Ten West Link at this location, thereby providing new reliable and cost-effective renewable energy to the southwestern United States. The Cielo Azul Project schedule anticipates that construction activities will begin by the end of 2021 or early 2022 and that the expected commercial operations date of the Project will be the fourth quarter of 2022.

Environmental Review

Environmental review of the Project site has been conducted as part of the NEPA review processes for both the Ten West Link Project and the La Paz County Land Conveyance. As documented in the Ten West Link EIS (which was examined at length by the Committee and entered into evidence during the Ten West Link line siting proceedings), the Project site land use cover is typical of the region, dominated by Creosote bush-White Bursage Desert Scrub.

There is no residential, commercial, or other existing development on the Project site. There are also no developed recreational areas or facilities on or adjacent to the Project site, neither are there any known issues of concern to Indian tribes. The Project site is located within the designated Sonoran Pronghorn Nonessential Experimental Population Area; however, no reports of this species being recorded near the project area were included in the EIS. The project site is not located in Sonoran Desert tortoise habitat or in any bighorn sheep lambing areas. There are no surface waters, wells or sensitive plant or wildlife critical habit on the Project site.

The Project site is in an area of existing infrastructure development, including I-10 (approximately 0.4 miles to the north) and the CAP Canal (approximately 1 mile to the east). As part of the Ten West Link EIS, a detailed visual impact analysis was conducted, and various mitigation measures were identified for visually sensitive areas. The portion of the Ten West Link project that is adjacent to the Cielo Azul project site did not require any additional mitigation measures.

In December 2019, the BLM published an EA for the La Paz County Land Conveyance that addressed the overall land conveyance property, including the 55 acres secured for the Cielo Azul Project. The EA found that “[b]ecause there are no significant cultural, environmental, wildlife, and recreational resources within the Dingell Act parcel, the BLM has determined that cumulative impacts would be negligible as a result of implementation of the Proposed Action”.

In May 2021, the firm of AZTEC conducted a Class III cultural resources survey of the Atlas Solar Project site as well as the 55-acre Cielo Azul project site. The survey was conducted in accordance with an Arizona Antiquities Act permit issued by the Arizona State Museum. No artifacts or sites were found within the Cielo Azul site. There are no cultural resources south or east of the Cielo Azul site that would interfere with access to the Project Site from Connector Road.

Public Outreach

DCRT understands the importance of effective public outreach to ensure both public knowledge and acceptance of a project. To that end, DCRT has created a website (<https://cieloazulswitchyard.com>) for the Project which provides the public with a map of the Project area as well a concise description of the Project, a Project implementation schedule, and a regulatory overview. To ensure that local governmental officials are familiar with the Project, DCRT representatives have conducted numerous meetings and conference calls with local elected county and city officials as well as representatives of the Colorado River Indian Tribe (CRIT) to inform them about the Project location, its general description, and the

attendant benefits. DCRT will be installing several signs in the general area of the Project that will provide information on the Project as well as the upcoming CEC hearing process.

PROJECT DESCRIPTION AND PROPOSED SITE

The Project will consist of an approximately six-bay, air-insulated, 500 kV switchyard with circuit breakers arranged in a highly reliable breaker-and-a-half configuration, associated relays inside a control building, a looped 500 kV connection to the Ten West Link, an adjacent microwave communication tower, and three 500 kV generation tie lines to the Atlas Solar project. The connection with Ten West Link and the generation tie-lines will be accomplished using self-supporting steel structures on drilled piers.

Access to the Project will be provided largely by existing roads, including Hovatter Road, AT&T Frontage Road, and Connector Road, south of I-10. An extension of the existing Ten West Link access road will be constructed to enter directly into to the Cielo Azul switchyard to allow for construction, operations, and maintenance.

PROJECT NEED AND BENEFITS

The purpose of the Project is to facilitate the interconnection of the Atlas Solar project and future generation projects proposing to interconnect to the Ten West Link at this location, thereby providing new reliable and cost-effective renewable energy to the southwestern United States. Thus, Cielo Azul will facilitate the development and effective integration of renewable resources, as discussed extensively during the hearing on the Ten West Link CEC application. In the absence of this Project, the proposed solar plus energy storage projects in La Paz County, AZ would not be able to connect to the bulk transmission network in an efficient and effective manner and such development in this area would stifle due to a lack of adequate transmission infrastructure. As such, among other benefits, the construction of the Project and its interconnection with Ten West Link brings substantial value to the economics, adequacy, and reliability of Arizona's energy supply.

CONCLUSION

In conclusion, the Project serves the broad public interest because it facilitates the interconnection of future solar and energy storage projects and other generation resources proposing to interconnect to the bulk electric grid via the Ten West Link at this location, with minimal impact to the environment and ecology of this state. DCRT therefore respectfully requests that the Committee issue a recommendation to the Commission to issue a CEC for the Cielo Azul Project, and that the Commission approve such recommendation pursuant to A.R.S. § 40- 360.07(C).

APPLICATION FOR A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY

1. Name and address of Applicant:

DCR Transmission, L.L.C., 591 W. Putnam Ave, Greenwich, CT 06830

Business Technical Representative

Name: Ali Amirali, Senior Vice President, Starwood Energy Group Global, Inc.

Address: 5 Greenwich Office Park, Greenwich, CT 06831

Name: Jason Crew, Senior Vice President, Starwood Energy Group Global, Inc.

Address: 5 Greenwich Office Park, Greenwich, CT 06831

Legal Representative

Names: Meghan H. Grabel, Elias Ancharski, Osborn Maledon PA

Address: 2929 N. Central Ave., Suite 2100, Phoenix, AZ 85012

Telephone: 602-640-9000

Email: mgrabel@omlaw.com eancharski@omlaw.com

2. Name, address and telephone number of a representative of Applicant who has access to technical knowledge and background information concerning this Application and who would be available to answer questions or furnish additional information:

Name: Ali Amirali

Address: 5 Greenwich Office Park, Greenwich, CT 06831 Phone: (916) 740-0990

E-mail: aamirali@starwood.com

Name: Jason Crew

Address: 5 Greenwich Office Park, Greenwich, CT 06831 Phone: (713) 569-8995

E-mail: jcrew@starwood.com

3. Dates on which Applicant filed a Ten-Year Plan in compliance with A.R.S. § 40-360.02, in which the facilities for which this application is made were described:

Pursuant to A.R.S. § 40-360.02, DCRT filed Ten-Year Plans with the Arizona Corporation Commission on January 29, 2016; January 31, 2017; January 31, 2018; January 30, 2019; January 31, 2020; January 29, 2021; and May 24, 2021.

4. Description of the proposed transmission line:

a. Nominal voltage for which the line is designed; description of the proposed structures and switchyards or substations associated therewith; and purpose for constructing said transmission line:

i. Nominal voltage for which the lines are designated:

500 kV.

ii. Description of proposed structures:

The Project will consist of a 500 kV switchyard and a looped 500 kV connection to the Ten West Link, and an adjacent microwave communication tower. The connection with Ten West Link will be accomplished using self-supporting steel structures on drilled piers. The general design and height of the structures are depicted in Exhibits G-1 and G-2, although some refinement may be required and made during the final engineering stage of the development. Each structure type would be determined during final design and selected based on site-specific conditions or to mitigate potential impacts to the landscape resulting from the Project.

Conductors on the structures will be installed in a horizontal configuration. The static wire and optical ground wire ("OPGW") will be approximately 22 feet above the phase conductors at the top of the structures.

iii. Description of proposed switchyard:

The Project will consist of a six-bay 500 kV switchyard with circuit breakers arranged in a highly reliable breaker-and-a-half configuration, a looped 500 kV connection to the Ten West Link, a control building, and an adjacent microwave communication tower. The Project will also have three 500 kV interconnections to the generation tie-lines associated with the Atlas Solar project. The connection with Ten West Link will be accomplished using self-supporting steel structures on drilled piers. The switchyard will be similar in characteristic to existing 500 kV substations in Arizona. Access to the Project will be provided largely through existing roads, including Hovatter Road, AT&T Frontage Road and Connector Road, south of I-10. An extension of the existing Ten West Link access road will be constructed to enter directly into the Project area to allow for construction, operations, and maintenance.

iv. Purpose for constructing:

DCRT will construct the Project to facilitate the interconnection of the Atlas Solar project and future generation projects proposing to interconnect to the bulk electric grid via the Ten West Link, thereby providing new reliable and cost-effective renewable energy to the southwestern United States.

b. General Location:

i. Description of geographical points near the Project:

The Project is in La Paz County, Arizona approximately 0.5 miles southeast of mile marker 58 on I-10, between Quartzite and Tonopah, Arizona.

ii. Straight-line distance between such geographic points:

The project is approximately 39 miles east of Quartzite, Arizona, and 35 miles west of Tonopah, Arizona.

iii. The length of the transmission line for each alternative route for which application is made:

N/A.

c. Detailed Dimensions:

i. Nominal width of right-of-way required: The vast majority of the land on which the Project will be located is controlled by DCRT; to the extent a right of way is required from a third party, it will be no greater than 200 feet.

ii. Nominal length of spans: 300 to 800 feet.

iii. Maximum height of supporting structures: 195 feet for steel structures.

iv. Minimum height of conductor above ground: 31.4 feet

d. Estimated costs of proposed transmission lines and route, stated separately:

The estimated cost of the Project is \$55 million.

e. Description of proposed route and switchyard locations.

Please see response to Section 4(a)(iv)(b)(i), above.

f. Land Ownership: List the ownership percentages of land traversed by the entire route (federal, state, Indian, private, etc.).

The land for this Project is owned by La Paz County as part of the BLM La Paz County Land Conveyance completed in 2019.

g. Jurisdictions

i. Areas of jurisdiction (as defined in A.R.S. § 40-360.04) affected by this project:

The Project is in La Paz County; no incorporated towns or cities will be affected.

ii. Designation of proposed sites or routes, if any, which are contrary to the zoning ordinances or master plans of affected areas of jurisdiction:

The Project is not located within contrary zoning ordinances or general plans of any affected jurisdictions. The Project is located on the land conveyed by the BLM to La Paz County Land 2019. The land was conveyed to promote economic development in La Paz County. La Paz County has executed a ROW agreement with 174 Energy Global for the development of Atlas Solar project on the land acquired from BLM. The Project will facilitate the interconnection of Atlas Solar and other solar and solar plus energy storage projects to the bulk transmission network.

h. Description of the environmental studies Applicant has performed or expects to perform, including the contemplated date of completion:

A substantial body of environmental analysis was developed in support of the EIS completed by the BLM for Ten West Link, and the Project is within the EIS study area. In particular, the FEIS and Technical Environmental Study ("TES") and its supporting documentation provide a robust analysis of the anticipated effects of the Ten West Link on a range of resources, including biological, cultural, air quality, land use, recreation, noise, visual, and public health and safety resources, among others. Studies completed for these analyses included literature reviews and, where appropriate, field evaluations. Additional surveys have been completed as required under the BLM's Record of Decision (ROD). In addition, the BLM completed an Environmental Assessment (EA) for the BLM La Paz County Land Conveyance (DOI-BLM-AZ-C020-2020-0004-EA). Details of the results of these selected NEPA evaluations are provided in the attached exhibits.

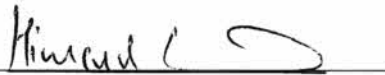
i. Rationale for selection of CEC Project and explanation for why no alternative was proposed:

The location of the Cielo Azul Switchyard was selected to accomplish an effective and efficient interconnection of solar photovoltaic ("PV") and energy storage projects in the area to the Ten West Link.

CONCLUSION

On balance, the Project serves the broad public interest because it facilitates the interconnection of solar PV and energy storage projects to the bulk electric grid via the Ten West Link, thereby providing new reliable and cost-effective renewable energy to the southwestern United States. The Project's interconnection with Ten West Link helps meet Arizona's need for an adequate, economical, and reliable supply of power with minimal impact to the environment and ecology of the State. The Project area has undergone a robust environmental analysis to support two NEPA reviews. DCRT therefore respectfully requests that the Committee issue a recommendation to the Commission to approve a CEC for the Project, and that the Commission approve such recommendation pursuant to A.R.S. § 40-360.07(C).

DCR Transmission, L.L.C.

By: 
Himanshu Saxena,
Chief Executive Officer
Starwood Energy Group Global, Inc.

**CIELO AZUL SWITCHYARD PROJECT
APPLICATION FOR CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY**

EXHIBITS TO APPLICATION (A – J)

- EXHIBIT A: LOCATIONS AND LAND USE MAPS**
- EXHIBIT B: ENVIRONMENTAL STUDIES**
- EXHIBIT C: AREAS OF BIOLOGICAL WEALTH**
- EXHIBIT D: BIOLOGICAL RESOURCES**
- EXHIBIT E: SCENIC AREAS, HISTORIC SITES AND STRUCTURES, AND
ARCHAEOLOGICAL SITES**
- EXHIBIT F: RECREATIONAL PURPOSES AND ASPECTS**
- EXHIBIT G: CONCEPTS OF PROPOSED FACILITIES**
- EXHIBIT H: EXISTING PLANS/LAND USE**
- EXHIBIT I: NOISE, RADIO, AND TELEVISION INTERFERENCE**
- EXHIBIT J: SPECIAL FACTORS**

**CIELO AZUL SWITCHYARD PROJECT
APPLICATION FOR CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY**

EXHIBIT A: LOCATIONS AND LAND USE MAPS

Per A.A.C. R14-3-219, Exhibits to Application, Exhibit A(1) and A(2) of an application for a Certificate of Environmental Compatibility must consider the following:

1. *Where commercially available,** a topographic map, 1:250,000 scale, showing the proposed plant site and the adjacent area within 20 miles thereof. If application is made for alternative plant sites, all sites may be shown on the same map, if practicable, designated by applicant's order of preference.*
2. *Where commercially available,** a topographic map, 1:62,500 scale, or each proposed plant site, showing the area within two miles thereof. The general land use plan within this area shall be shown on the map, which shall also show the areas of jurisdiction affected and any boundaries between such areas of jurisdiction. If the general land use plan is uniform throughout the area depicted, it may be described in the legend in lieu of an overlay.*
3. *Where commercially available,** a topographic map, 1:250,000 scale, showing any proposed transmission line route of more than 50 miles in length and the adjacent area. For routes of less than 50 miles in length, use a scale of 1:62,500. If application is made for alternative transmission line routes, all routes may be shown on the same map, if practicable, designated by applicant's order of preference."*
4. *Where commercially available,** a topographic map, 1:62,500 scale, of each proposed transmission line route of more than 50 miles in length showing that portion of the route within two miles of any subdivided area. The general land use plan within the area shall be shown on a 1:62,500 map required for Exhibit A-3, and for the map required by this Exhibit A-4, which shall also show the areas of jurisdiction affected and any boundaries between such areas of jurisdiction. If the general land use plan is uniform throughout the area depicted, it may be described in the legend in lieu of an overlay."*

*** If a topographic map is not commercially available, a map of similar scale, which reflects prominent or important physical features of the area in the vicinity of the proposed site or route, shall be substituted.*

The following maps are provided pursuant to R14-3-219, Exhibits to Application, Exhibit A.

Exhibit A-1	Project Detail: Small Scale Map
Exhibit A-2	Project Detail: Large Scale Map
Exhibit A-3	Not Applicable
Exhibit A-4	Not Applicable

PROJECT OVERVIEW

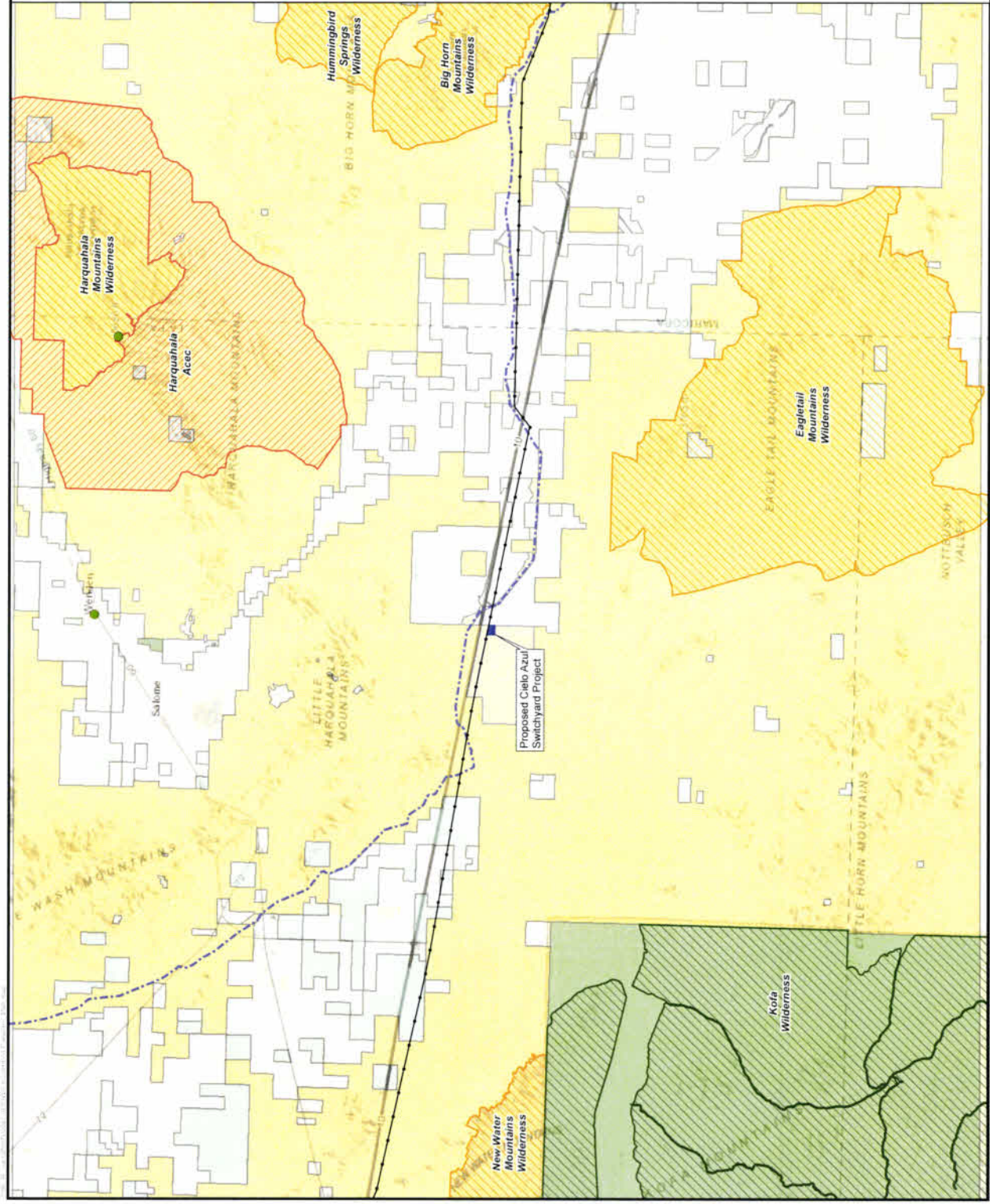
Exhibit A-1 is a map showing the Cielo Azul switchyard area (the Project area) near mile marker 58 on Interstate 10 (I-10) in La Paz County, Arizona on a topographic map at a 1:250,000 scale. The subject of this Certificate of Environmental Compatibility application is the switchyard, a control building, associated infrastructure, a looped 500 kV connection to the Ten West Link 500 kV transmission line, and three 500 kV connections to the generation tie-lines for the Atlas Solar project.

PROJECT DETAILS: SMALL SCALE MAP

Exhibit A-2 is a map showing the Project area on a topographic map at a 1:62,500 scale. This map includes relevant jurisdictions and sensitive environmental areas.

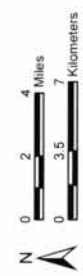
Exhibit A-I

**Project Detail:
Small Scale Map**



T3N, R13W, Portion of Section 24,
 La Paz County, Arizona.
 Surface Management: BLM 2019, WRI modified 2020
 Data Source: DCRIT, BLM 2016, ALRIS/ASLD 2017,
 USFWS 2016, NPS National Register of Historic Places,
 Image Source: ArcGIS Online, World Topographic Map

- Legend**
- NPS Historic Building
 - Ten West Transmission Line
 - CAP Canal
 - Proposed Cielo Azul
 - BLM designated Area of Critical Environmental Concern (ACEC)
 - Wilderness Area**
 - Bureau of Land Management
 - Fish and Wildlife Service
 - Surface Management**
 - Bureau of Land Management (BLM)
 - Bureau of Reclamation
 - County
 - Local or State Parks
 - Private Land (No Color)
 - State Trust Land
 - US Fish and Wildlife (USFWS)

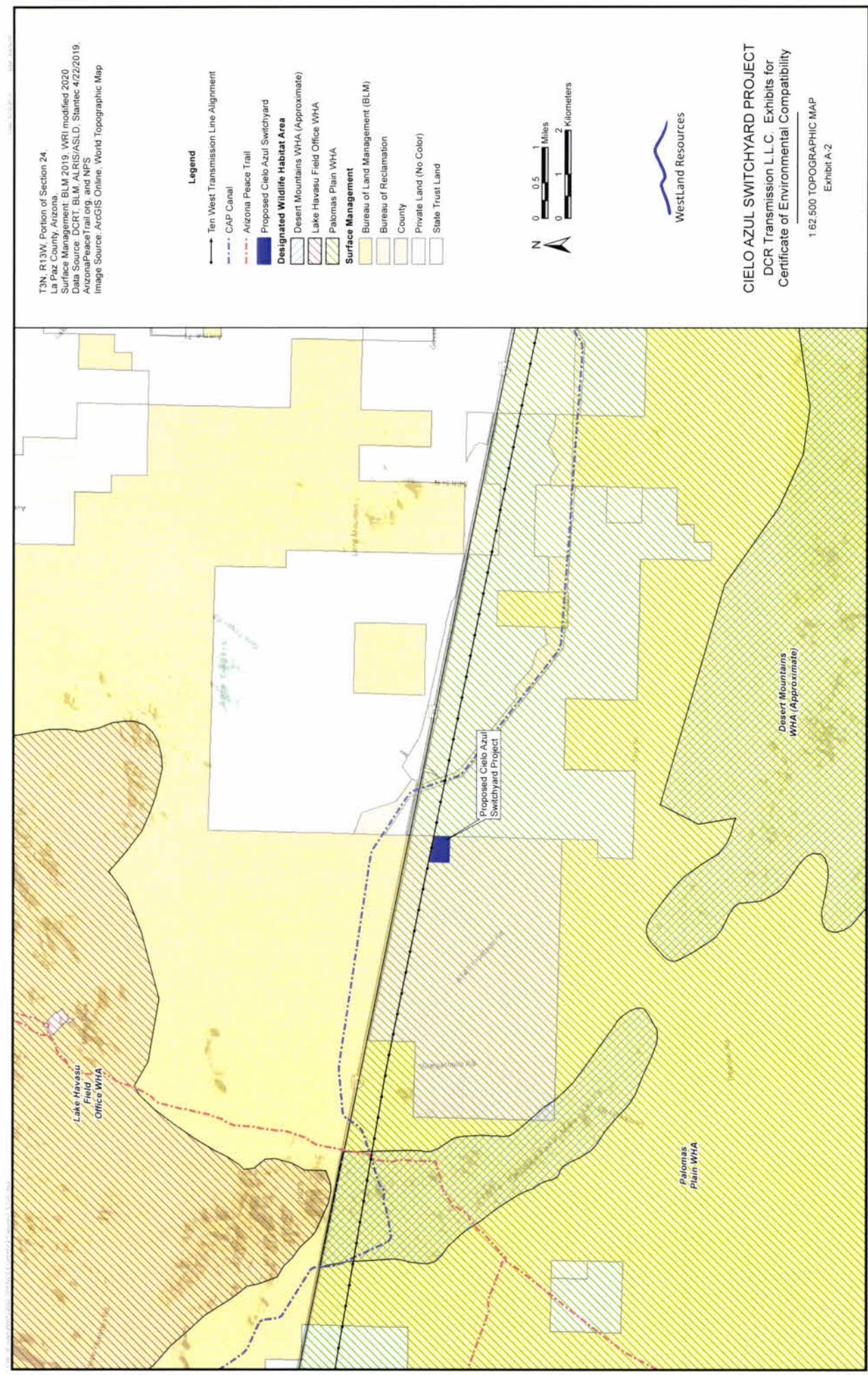


CIELO AZUL SWITCHYARD PROJECT DCR Transmission L.L.C. Exhibits for Certificate of Environmental Compatibility

1:250,000 TOPOGRAPHIC MAP
 Exhibit A-1

Exhibit A-2

**Project Detail:
Large Scale Map**



T3N, R13W, Portion of Section 24,
La Paz County, Arizona
Surface Management: BLM 2019, WRI modified 2020
Data Source: DORT, BLM, ARLIS/ASLD, Stantec 4/22/2019,
ArizonaPeaceTrail.org, and NPS
Image Source: ArcGIS Online, World Topographic Map

Legend

- Ten West Transmission Line Alignment
- CAP Canal
- Arizona Peace Trail
- Proposed Cielo Azul Switchyard
- Designated Wildlife Habitat Area
- Desert Mountains WHA (Approximate)
- Lake Havasu Field Office WHA
- Palomas Plain WHA
- Surface Management**
- Bureau of Land Management (BLM)
- Bureau of Reclamation
- County
- Private Land (No Color)
- State Trust Land



CIELO AZUL SWITCHYARD PROJECT
DCR Transmission L.L.C. Exhibits for
Certificate of Environmental Compatibility

1:62,500 TOPOGRAPHIC MAP
Exhibit A-2

**CIELO AZUL SWITCHYARD PROJECT
APPLICATION FOR CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY**

EXHIBIT B: ENVIRONMENTAL STUDIES

Per A.A.C. R14-3-219, Exhibits to Application, Exhibit B of an application for a Certificate of Environmental Compatibility must consider the following:

Attach any environmental studies which applicant has made or obtained in connection with the proposed site(s) or route(s). If an environmental report has been prepared for any Federal agency or if a Federal agency has prepared an environmental statement pursuant to Section 102 of the National Environmental Policy Act, a copy shall be included as part of this exhibit.

The studies relevant to the Project as it relates to Ten West Link and included in this exhibit are:

- **Exhibit B-1:** Biological Assessment
- **Exhibit B-2:** U.S. Fish and Wildlife Service Biological Assessment Letter of Concurrence

The study relevant to the Project as it relates to the BLM La Paz County Land Conveyance included in this exhibit is:

- **Exhibit B-3:** Environmental Assessment for the BLM La Paz County Land Conveyance (DOI-BLM-AZ-C020-2020-0004-EA).

The environmental letter relevant to the Project included in this exhibit is:

- **Exhibit B-4:** Arizona Game and Fish Department. Letter to Randy Schulze, CBX International on behalf of DCR Transmission, L.L.C., responding to request for Cielo Azul Project review. Dated June 4, 2021.

Exhibit B-1

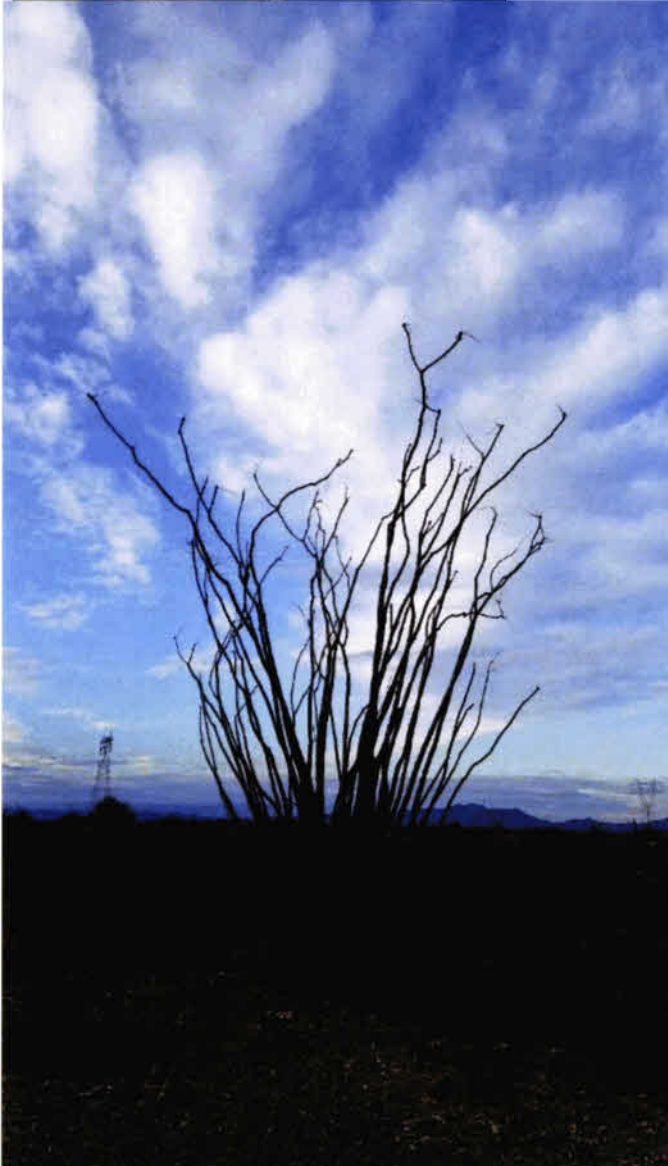
**Biological
Assessment**



Final Biological
Assessment
For the
Ten West Link
Transmission Line Project

U.S. Bureau of Land Management
Phoenix, Arizona

June 2019



Abbreviations and Acronyms

ac	acre
AGFD	Arizona Game and Fish Department
APMs	Applicant Proposed Measures
BLM	U.S. Bureau of Land Management
BMPs	Best Management Practices
CFR	Code of Federal Regulations
CMAs	Conservation and Management Actions
DCRT	DCR Transmission, LLC
DPS	Distinct Population Segment
EIS	Environmental Impact Statement
ESA	Endangered Species Act
FR	Federal Register
kV	kilovolt
LCR MSCP	Lower Colorado River Multi-Species Conservation Program
MMs	Mitigation Measures
NWR	National Wildlife Refuge
POD	Plan of Development
ROW	Right-of-Way
SCS	series compensation station
TWL	Ten West Link
USFWS	U.S. Fish and Wildlife Service

FINAL BIOLOGICAL ASSESSMENT

FOR THE

TEN WEST LINK TRANSMISSION LINE PROJECT

U.S. BUREAU OF LAND MANAGEMENT

PHOENIX, ARIZONA

JUNE 2019

**FINAL BIOLOGICAL ASSESSMENT
FOR
TEN WEST LINK TRANSMISSION LINE PROJECT**

TABLE OF CONTENTS

ABBREVIATIONS AND ACRONYMSINSIDE FRONT COVER

1. INTRODUCTION	1-7
1.1 THREATENED AND ENDANGERED SPECIES AND CRITICAL HABITAT ADDRESSED	1-7
1.2 CONSULTATION HISTORY	1-12
2. PROJECT DESCRIPTION AND ACTION AREA.....	2-1
2.1 PROJECT DESCRIPTION.....	2-1
2.1.1 Preparation of Plan of Development	2-1
2.1.2 Preconstruction.....	2-7
2.1.3 Construction	2-7
2.1.4 Operation and Maintenance	2-10
2.1.5 Termination, Reclamation, and Decommissioning	2-11
2.2 ACTION AREA	2-12
2.3 IMPACT MINIMIZATION AND CONSERVATION MEASURES	2-13
3. STATUS OF THREATENED AND ENDANGERED SPECIES	3-1
3.1 SONORAN PRONGHORN	3-1
3.2 YELLOW-BILLED CUCKOO	3-7
3.3 SOUTHWESTERN WILLOW FLYCATCHER.....	3-9
3.4 YUMA CLAPPER RAIL (YUMA RIDGWAY'S RAIL).....	3-14
3.5 RAZORBACK SUCKER.....	3-17
3.6 BONYTAIL CHUB.....	3-18
4. EFFECTS OF THE ACTION	4-1
4.1 SONORAN PRONGHORN	4-1
4.2 AVIAN SPECIES.....	4-5
4.3 FISHES	4-13
5. SUMMARY OF DETERMINATIONS	5-15
6. REFERENCES	6-1

APPENDIX A – IMPACT MINIMIZATION AND CONSERVATION MEASURES

APPENDIX B – DESERT TORTOISE ACTIVITY REQUEST FORM

**APPENDIX C – IDENTIFYING BIRD STRIKE AVOIDANCE TECHNOLOGY FOR THE TEN WEST
TRANSMISSION LINE EDM 2019**

FIGURES

Figure 1. TWL transmission line route and associated action area (1-mile buffer) (BLM Preferred Alternative).....	1-9
Figure 2. Designated and proposed critical habitat at the crossing of the Colorado River (with backwater channels A-10 and CA-7 labeled).	1-10
Figure 3. Designated critical habitat for desert tortoises west of the TWL transmission line route.	1-11
Figure 4. Location of TWL Transmission Line Route and the Sonoran Pronghorn Nonessential Experimental Population.....	3-2
Figure 5. Closest Location (Top) and Proximity (Bottom) of TWL Transmission Line Route to Kofa NWR.....	3-3
Figure 6. Locations of Sonoran Pronghorn in the Kofa Population	3-5
Figure 7. La Posa Plain east (top) and west (bottom) of U.S. 95 along the route of the TWL transmission line.	3-6
Figure 8. TWL Transmission Line crossing of the Colorado River. Black – transmission center line, red – action area boundary, dark red – structure (tower) work areas, brown – access roads, yellow – western yellow-billed cuckoo proposed critical habitat.....	3-11
Figure 9. Location where TWL transmission line will cross the Colorado River (top) and floodplain immediately east of that crossing (bottom). The TWL transmission line will be constructed about 200 feet north of the transmission line shown in the photographs.	3-12
Figure 10. Potential Yuma clapper rail habitat in a backwater channel 0.6 miles south of the TWL transmission line crossing of the Colorado River.	3-15
Figure 11. Irrigation canal (top) and irrigation drain with vegetation along TWL transmission line route in Palo Verde Valley.	3-16

TABLES

Table 1. Federally Listed Endangered, Threatened, and PROposed Species Along or Near the TWL Route.....	1-13
Table 2. Project Construction and Decommissioning Activities.....	2-2
Table 3. Area (acres) to be Disturbed for Construction and Operation of the Transmission Line	2-8
Table 4. BLM Accepted Active Ingredients in Herbicides (Young et al. 2017)	2-11
Table 5. FEIS Best Management Practices and Mitigation Measures that Provide Additional Benefits to Sonoran Pronghorn	4-2
Table 6. Summary of FEIS Best Management Practices and Mitigation Measures that Provide Additional Benefits to Listed Avian Species	4-8
Table 7. Summary of FEIS Best Management Practices and Mitigation Measures that Provide Additional Benefits to Listed Fish	4-14

Intentionally Left Blank

1. Introduction

DCR Transmission, LLC (DCRT) has proposed development of a 500-kilovolt (kV) transmission line between the Arizona Public Service Delaney Substation in Maricopa County, Arizona and the Southern California Edison Colorado River Substation in Riverside County, California. This Project, the Ten West Link (TWL) Transmission Line Project, will provide interconnection capacity for both existing and new energy projects in the region. The transmission line will be approximately 125-miles-long and will cross lands managed by the U.S. Bureau of Land Management (BLM), Bureau of Reclamation, Department of Defense, and Arizona State Land Department, in addition to private property.

DCRT has requested a right-of-way (ROW) grant from the BLM across public land to construct, operate, maintain, and ultimately decommission the Project. This Biological Assessment (BA) was prepared for the project by DCRT on behalf of the BLM and federal cooperating agencies to meet the requirements of Section 7(a)(2) of the Endangered Species Act (ESA), and the implementing regulations of that Act at 50 Code of Federal Regulations (CFR) § 402. Under these requirements, the BLM must evaluate the effects of their federal action (i.e., the issuance of a ROW grant) on federally listed threatened, endangered, and proposed species and designated and proposed critical habitat. The BLM must also consult and conference as appropriate with the U.S. Fish and Wildlife Service (USFWS). Other federal agencies, including the Bureau of Reclamation, Western Area Power Authority, and Department of Defense also might issue land use authorizations or take other federal actions related to the Project; this BA is intended to meet the ESA requirements of those agencies as well. Per 50 CFR § 402.07, the BLM has been designated as the lead agency for ESA consultation and conference responsibilities for the Project.

1.1 Threatened and Endangered Species and Critical Habitat Addressed

The entire Project Area is included within two subdivisions of the Sonoran Desert: Lower Colorado River Valley and Arizona Uplands, represented by various plant associations and habitat types (including physical features). There are three major habitats for the conservation of birds that are present in or near the Project Area: Sonoran desertscrub, low-elevation riparian habitat (including xeroriparian washes), and freshwater marshes. Sonoran desertscrub and xeroriparian washes are found throughout the Project Area; riparian habitat and freshwater marshes are present only along the Colorado River. Cultivated fields and other developed lands are west of the Colorado River and along portions of I-10.

Endangered, threatened, and proposed species that could occur within or near the TWL route were identified during discussions with USFWS staff (**Section 1.2**) and by querying the USFWS's Information for Planning and Conservation database (USFWS 2019a), reviewing BLM Resource Management Plans for the region (BLM 1980, 2002, 2007, 2010a, 2010b, 2012, 2016), and evaluating published and unpublished information about the listed species. Based on that information, the BLM has determined that seven threatened or endangered species (listed in **Table 1-1**) occur or could occur within or near the route that the BLM has identified as their preferred route (BLM 2018, Section 2.5), hereafter referred to as the agency preferred route or TWL transmission line route (**Figure 1**).

The TWL route crosses designated critical habitat for the razorback sucker (*Xyrauchen texanus*, endangered) and proposed critical habitat for the western distinct population segment (DPS) of the yellow-billed cuckoo (*Coccyzus americanus occidentalis*, threatened) (**Figure 2**). Designated critical habitat for the Mojave Desert tortoise (*Gopherus agassizii*, threatened) is located about three miles west of the Colorado River Substation, the western terminus of the TWL transmission line (**Figure 3**).

In 2017, the U.S. Fish and Wildlife Service (Service) issued a biological opinion (FWS-KRN/SBD/INY/LA/IMP/RIV-17B0532-17F1029) to the California BLM Desert District, which addressed activities that BLM undertakes or authorizes within the boundaries of the California Desert Conservation Area. The Project crosses into the California Desert Conservation Area, where there is potential for desert tortoises to occur. After discussions with BLM and the Service, both of our agencies agreed that the biological opinion could be used to address the effects of the action on desert tortoises. BLM will ensure that the appropriate conservation management actions (CMAs) are implemented and included those CMAs and other relevant information in an Activity Form. The California BLM Desert District will ensure that the appropriate reporting requirements are fulfilled. For these reasons, the desert tortoise is not further addressed in the BA.

The following two other endangered or threatened species were identified in the information listed above as present in the region but are unlikely to be present in the action area (as defined in **Section 2.4**). The BLM therefore has concluded that the Project will not affect these species, and they are not further addressed in this BA.

- **California least tern** (*Sterna antillarum browni*, endangered) are uncommon in Arizona and eastern California and are found on beaches, sand bars, shorelines, and other barren or sparsely vegetated areas near water. There is no habitat for this species along or near the proposed crossing of the Colorado River (USFWS 2006) or elsewhere near the TWL route.
- **Northern Mexican gartersnake** (*Thamnophis eques megalops*, threatened) are restricted to riparian areas such as wetlands, stock tanks, and riverine riparian woodlands, and are found primarily in eastern and central Arizona. The only potential habitat for this species near the TWL route is along and near the Colorado River; this species likely has been extirpated from that area (78 FR 41500).

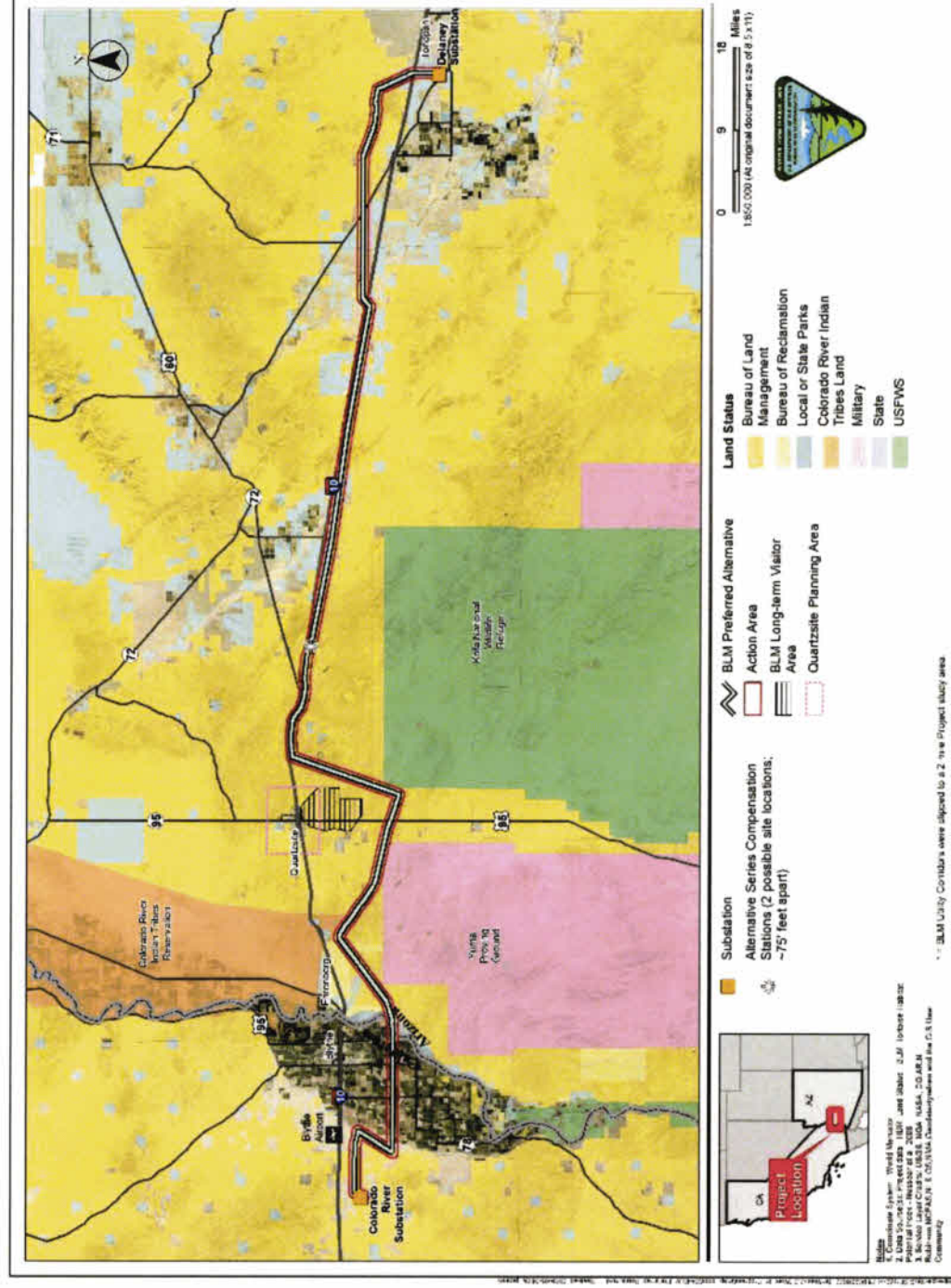


Figure 1. TWL transmission line route and associated action area (1-mile buffer) (BLM Preferred Alternative).

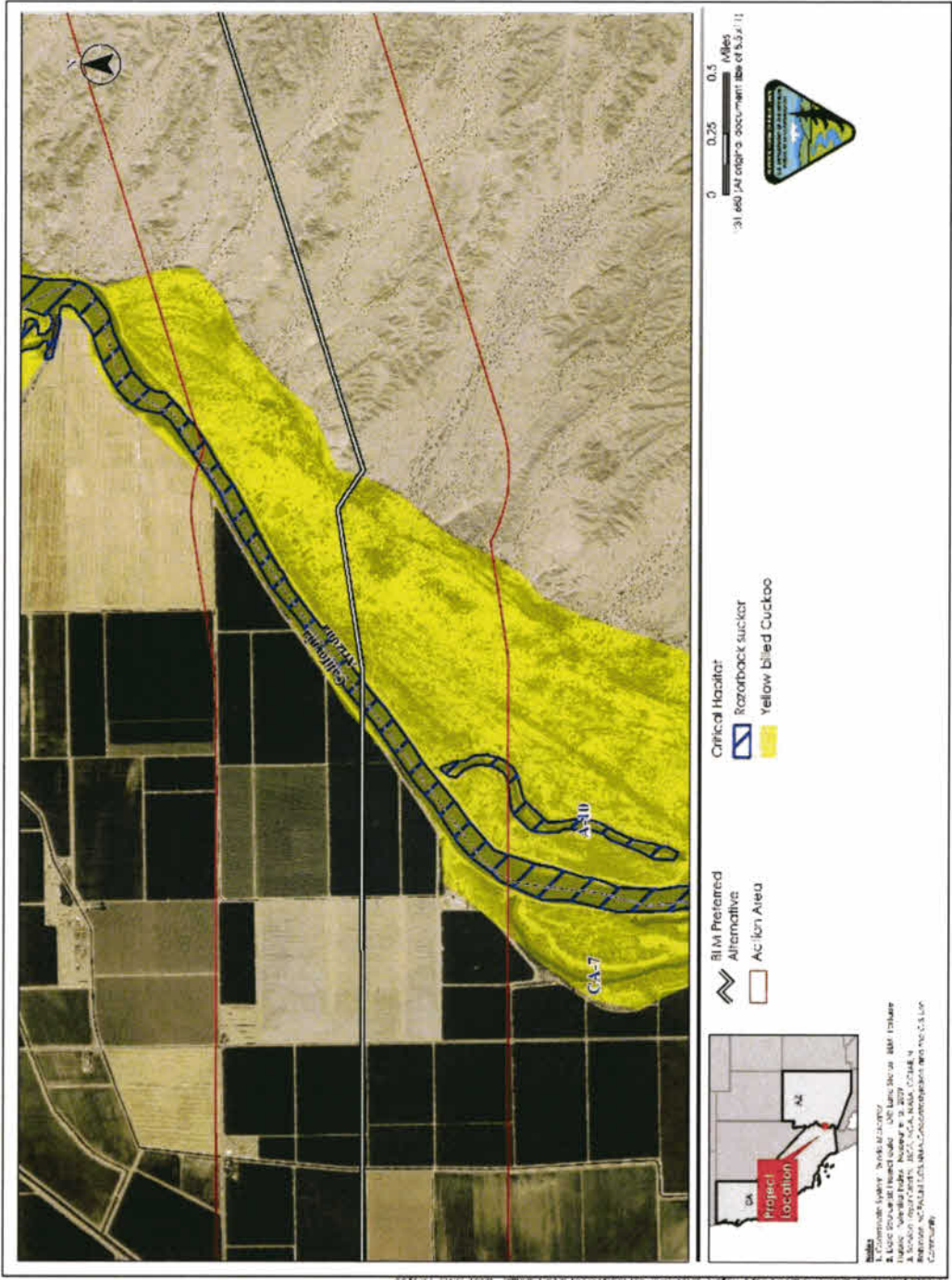


Figure 2. Designated and proposed critical habitat at the crossing of the Colorado River (with backwater channels A-10 and CA-7 labeled).

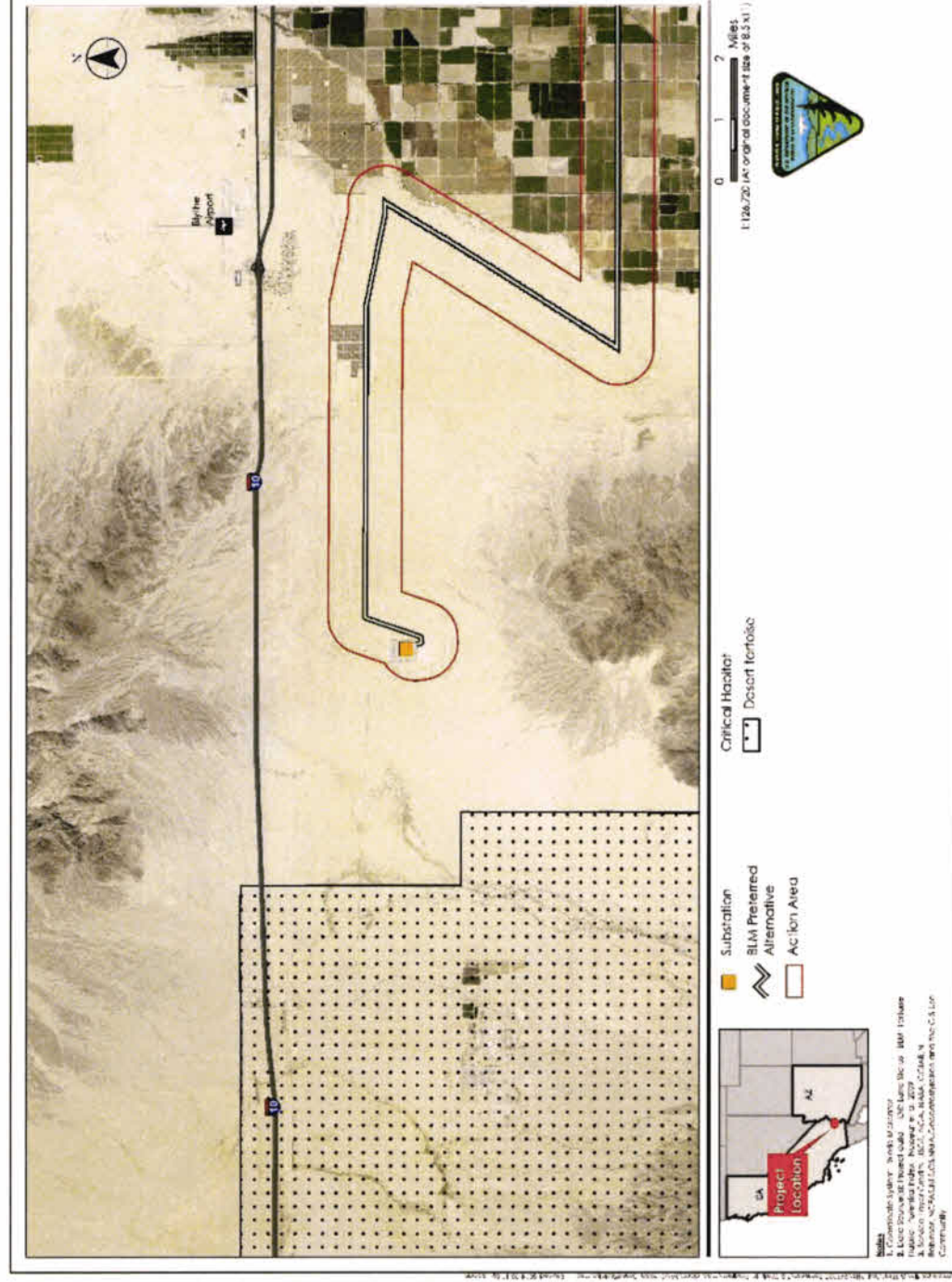


Figure 3. Designated critical habitat for desert tortoises west of the TWL transmission line route.

1.2 Consultation History

The following actions were taken during preparation for and in support of the ESA consultation for the TWL Project.

- BLM, USFWS, and DCRT staff held a teleconference on September 20, 2018, to discuss the Project. Issues discussed included a description of the Project, listed species and critical habitat that could be affected, information available to evaluate effects to those species, and the consultation process.
- On October 5, 2018, K. Rautenstrauch (HDR) requested from USFWS staff information on threatened and endangered birds striking and being injured or killed by transmission lines. On October 9, 2018, Ray Bransfield and P. Sanzebacher (USFWS) provided information on observations of birds and other wildlife found dead during monitoring of transmission lines and renewable energy projects.
- On October 5, 2018, K. Rautenstrauch (HDR) requested from USFWS staff information on movements of Sonoran pronghorn antelope on and around Kofa National Wildlife Refuge (NWR).
- On December 6, 2018, a teleconference was held with staff from BLM, USFWS, and DCRT to discuss the status and content of the Biological Assessment.
- A list of federally listed species was last obtained from the USFWS's Information for Planning and Conservation dated May 20, 2019.
- A draft version of this BA was provided to the USFWS for review in March 2019.
- Teleconferences were held with BLM, USFWS, and TWL staff on and following March 22 to discuss comments on the draft BA.
- A revised BA was provided to the USFWS for review in May 2019.
- An additional coordination call with USFWS occurred on June 11, 2019.

Table 1. Federally Listed Endangered, Threatened, and Proposed Species Along or Near the TWL Route

Species		Status	Habitat	Potential for Occurrence ¹
<i>Antilocapra americana sonoriensis</i>	Sonoran pronghorn	Endangered nonessential experimental population	Sonoran desert scrub in open valleys	Introduced into Kofa National Wildlife Refuge south of the proposed route in 2011. Could be present now or in the future along or near the TWL route near the Refuge.
<i>Coccyzus americanus occidentalis</i>	Western yellow-billed cuckoo DPS	Threatened	Nests in dense, wide riparian woodlands with well-developed understories	Present along the Colorado River in suitable habitat. There is no habitat at TWL river crossing that is suitable for nesting, although this species is likely to pass through the area during migration.
<i>Coccyzus americanus occidentalis</i>	Western yellow-billed cuckoo DPS	Proposed Critical Habitat	Colorado River floodplain	The route crosses proposed critical habitat unit CA/AZ 1 (Colorado River 1) along the Colorado River
<i>Empidonax traillii eximius</i>	Southwestern willow flycatcher	Endangered	Nests in early successional riparian habitats with a dense understory and water. Strongly associated plant species include seepwillow (aka mulefat; <i>Baccharis</i> spp.), boxelder (<i>Acer negundo</i>), stinging nettle (<i>Urtica</i> spp.), blackberry (<i>Rubus</i> spp.), cottonwood (<i>Populus</i> spp.), arrowweed (<i>Tessaria senicea</i>), and Russian olive (<i>Eleagnus angustifolia</i>)	Nests along the Colorado River in suitable habitat and travels throughout the Colorado River Valley. There is no nesting habitat at the TWL river crossing.

¹ The Colorado River provides important riparian and wetland habitat for a variety of species in an otherwise arid landscape and is being identified as an important corridor for northbound migrants in the spring (<https://www.audubon.org/important-bird-areas/lower-colorado-river-valley>). FR 70 60893 provides additional documentation in response to comments on critical habitat stating use of the entire length of the Colorado River and its tributaries by willow flycatchers during migration.

Species		Status	Habitat	Potential for Occurrence ¹
<i>Rallus obsoletus yumanensis</i> (<i>Rallus longirostris yumanensis</i>)	Yuma clapper rail (Yuma Ridgway's rail)	Endangered	Freshwater marshes with stands of bulrushes and cattails	Known to be present in canals and drains adjacent to agricultural fields in California and to travel along the Colorado River Valley. There is no suitable marsh habitat at the TWL crossing of the Colorado River, but there is potential habitat in nearby backwater channels.
<i>Gopherus agassizii</i>	Mojave desert tortoise	Threatened	Sonoran desert scrub	Known to be present on Palo Verde Mesa around the Colorado River Substation.
<i>Gopherus agassizii</i>	Mojave desert tortoise	Critical Habitat	Sonoran desert scrub	There is designated critical habitat (Chuckwalla Unit) 3 miles west of the Colorado River substation.
<i>Gila elegans</i>	Bonytail chub	Endangered	Mainstream rivers, possibly preferring rocky areas and areas with faster flow. Also use eddies and pools 1-3 m deep.	Hatchery reared fish are released into backwater channels near the TWL crossing of the Colorado River.
<i>Xyrauchen texanus</i>	Razorback sucker	Endangered	<i>Spring</i> – deep runs, eddies, backwaters, and flooded off-channels; <i>summer</i> – runs and pools in shallow water with sandbars; <i>winter</i> – low-velocity runs, pools, and eddies	Known to be present in mainstream Colorado River and nearby backwaters in and near the TWL crossing. The transmission line will span critical habitat.
<i>Xyrauchen texanus</i>	Razorback sucker	Critical Habitat	Colorado River stream channel	The transmission line will span critical habitat along the Colorado River

Intentionally Left Blank

2. Project Description and Action Area

The TWL transmission line project will include constructing, operating, and decommissioning a 500-kV, alternating current, overhead transmission line traversing about 125 miles in western Arizona and eastern California. The project also will include a new series compensation station (SCS) and upgrades to the Delaney and Colorado River substations.

The BLM has identified a preferred route for the Project (BLM 2018, Section 2.5) (**Figure 1**). At its eastern end, the transmission line will tie into the Delaney Substation, located about 5.6 miles southeast of Tonopah, Arizona. From that substation, the line will traverse north about 6 miles to Burnt Mountain, then west paralleling the Central Arizona Project Canal north of Interstate 10 (I-10) for about 20 miles. The line will then cross to the south of I-10 and will be parallel to and within 0.1 to 0.7 miles of that highway for about 42 miles through the Harquahala and Ranegras plains and the Plomosa Mountains. West of those mountains, the line will traverse south and then west across the La Posa Plain for about 18 miles, crossing within about 600 feet of the northwestern corner of the Kofa NWR, and then through the Dome Rock Mountains via Copper Bottom Pass and to the Colorado River (17 miles). The transmission line will cross the Colorado River about 5 miles south of Blythe and cross about 11 miles of cultivated fields in Palo Verde Valley, California. West of that developed area, the line will turn northeast for 4 miles along the eastern edge of Palo Verde Mesa and then west for 6 miles across that mesa to the Colorado River Substation.

The SCS will be constructed on BLM-administered land just south of I-10 and about 17 miles east of Quartzsite.

The following is a summary of construction and operation activities that could affect the listed species addressed in this BA. **Table 2** provides additional details about activities to occur during preconstruction, construction, and operations; potential stressors; and the frequency, duration, and intensity of activities.

2.1 Project Description

2.1.1 Preparation of Plan of Development

A draft Plan of Development (POD), referred to as the National Environmental Policy Act POD, is being prepared and will be reviewed by the agencies prior to the BLM and other federal agencies issuing a Record of Decision for the Project. The POD will be refined when resource pedestrian surveys (e.g., biological, cultural, and paleontological resources) have been completed and the resulting reports have been approved by the agency (or agencies) responsible for overseeing the surveys. Refinements to the locations where environmental protection measures would be applied in the POD will be incorporated based on the results of the surveys and the agencies will be asked to review the refined POD, referred to as the Construction POD. The locations of structures, access roads, and other facilities may be altered as required by selective mitigation measures required by the BLM or other agencies' Records of Decision based on the results of resource surveys. The POD also will contain all conservation measures identified through the Section 7 consultation process. Any stipulations or requirements outlined during consultation and the permitting process will be incorporated into the POD.

ESA-listed threatened or endangered species or species that are proposed or candidates for listing will be considered in accordance with management policies set forth by appropriate land-management or wildlife-management agencies. Conservation measures developed through the NEPA process and Section 7 consultation to address direct and indirect effects on species will be incorporated into the Biological Resources Conservation Measures Plan to be developed for the POD. The purpose of this plan will be to assist the BLM, USFS, and Proponent personnel in meeting their obligations to protect biological resources during construction, operation, and maintenance of the Project. All relevant BLM and USFWS requirements (including monitoring) will be included in this plan and the Project will be required to be constructed and operated in compliance with stipulations in this plan.

Table 2. Project Construction and Decommissioning Activities

Activity	Location of activity	Activity Components	Frequency, Duration, and Intensity of Activity ¹
Preconstruction Activities			
Resource surveys	Substations, series compensation locations and along the transmission-line right-of-way (all activities within construction footprint); access roads; spur roads; temporary work areas.	Site access via existing roads and approved overland travel by road-legal two-wheel-drive and four-wheel-drive vehicles; verify and stake jurisdictional washes, wetlands, and other sensitive resource boundaries.	Frequency: Multiple occurrences, depending on survey type. Duration: Each survey typically 1 to 2 days per site Intensity: Low
Geotechnical investigation	Series compensation locations, and along the transmission-line right-of-way (all activities within subsequent construction footprint).	Site access via existing roads and approved overland travel by road-legal two-wheel-drive and four-wheel-drive trucks, tracked vehicles, oversized-tire all-terrain vehicles or on platform rigs, water truck and/or support vehicle, large air compressor, pickup truck or utility vehicles; drilling and sampling of soils; may involve mud rotary drilling; existing roads will not be improved for the geotechnical investigation.	Frequency: Single occurrence; estimated total of 169 boreholes across entire transmission line, including 4 bore holes series compensation station. Duration: 1 to 2 days per site Crew: One-2-ton drill truck with crew Intensity: Low
Staking and surveying of Project features	Centerline; structure center hubs; right-of-way boundaries; access roads; spur roads; temporary work areas, jurisdictional washes; disturbance limits; sensitive resources to avoid.	Verifying and staking of boundaries of Project features; sensitive resource avoidance areas and features.	Frequency: Varies; single occurrence and multiple occurrences, depending on survey and terrain. Duration: Each survey typically 1 to 2 days per site Crew: Vehicle and foot traffic, survey equipment Intensity: Low
Construction Activities			
Multi-purpose construction yard establishment	Four material staging yards totaling 34.5 acres; specific work areas would be identified during engineering design of the Project; each site would be approved by the agencies and identified in the Plan of Development (POD).	Vegetation clearing; grading; leveling. Once established, sites will be used for material laydown and storage, structure fabrication and staging, helicopter landing, refueling, construction trailers, field offices, reporting locations for workers, parking space for vehicles and equipment, concrete batch plants (when existing batch plants are out of range), and stations for equipment maintenance; site access would be accomplished using access roads improved or newly constructed.	Frequency: Single occurrence; sites would be in use throughout construction phase of Project (up to 3 years) Duration: 1-2 weeks Crew: 40-ton crane, bulldozers, grader, other vehicles Intensity: High

Activity	Location of activity	Activity Components	Frequency, Duration, and Intensity of Activity ¹
Existing access road improvements and construction of new access roads	As determined necessary on all existing and new access roads to be used to access Project facilities; specific areas would be identified during engineering design of the Project; In or out of right-of-way to access all structure locations for newly constructed access roads.	Roads graded and/or graveled to provide a smooth all- weather travel surface; vegetation removal if widening; water used for dust control. Roads developed as needed to provide a minimum of a 16- foot-wide travel way; vegetation clearing; grading; water used for dust control; soil compaction; wash crossings; rock placement if needed; culverts; sediment and erosion control device installation.	Frequency: Single occurrence for construction multiple occurrences for maintenance; specific plans for the rehabilitation of roads would be documented in the POD. Duration: Access establishment through cleanup and reclamation typically takes 4 to 6 months at each site Crew: 1-2 graders Intensity: High
Structure work area development	In transmission right-of-way at each tower site location.	Vegetation clearing; grading and shooting rock; stripping and conserving topsoil; leveling work site; compaction; dust abatement measures; sediment and erosion control device installations.	Frequency: Single occurrence per location; sites would be in use throughout construction of Project. Duration: Typical construction crews and equipment for all construction activities discussed in the Environmental Impact Statement. Crews that would move through the site at different stages of construction include staking, grubbing, grading/bull dozing and compaction. Intensity: High
Right-of-way vegetation preparation	In the transmission-line right-of-way.	Vegetation removal to height standards with heavy equipment and hand tools (e.g., chainsaws); vegetation salvage and transplantation where required; travel on access roads; overland travel.	Frequency: Single occurrence for initial vegetation height and/or site clearing standards. Single once-move technique for vegetation salvage and transplant. Duration: Access and work area establishment through cleanup and reclamation typically takes 2 to 4 months at each site. Crew: foot and vehicular traffic, chainsaws or hand tools, possibly heavy equipment in highly

Activity	Location of activity	Activity Components	Frequency, Duration, and Intensity of Activity ¹
			vegetated areas. Intensity: High
Foundation construction	In right-of-way at structure work areas and tower centers.	Drilling/excavation of each foundation pier; setting of stub angle or precast foundation (stub angle includes rebar reinforcement and/or anchor bolt cage) pouring of concrete casting; testing and stripping of pier; grout finish of pier.	Frequency: multiple occurrences per tower based on tower type. Duration: from the completion of structure work areas to the commencement of structure assembly approximately 6 days per tower. Foundation piers will be a permanent fixation. Crew: augers, bulldozer, wagon drills, front-end loaders, flatbed trucks with booms, 75/100-ton cranes, carry-alls, 2-ton trucks. Intensity: Moderate
Structure assembly	In the transmission right-of-way at each tower center location or pre-assembly may occur at staging yards.	Steel delivery; framing and assembly; tower erection; torquing of bolts and testing of assemblage; hanging of insulators; structure grounding.	Frequency: single occurrence per tower Duration: from the completion of foundations to the commencement of wire approximately 4 days per site. Structure assembly will be a permanent fixation. Crew: 40-ton cranes, 2-ton cranes, carry-alls Intensity: low
Conductor, static, and fiber stringing	Throughout transmission right-of-way; puller and tensioner sites in and outside of the Right-of-way; guard pole areas; staging yards.	Site clearing and grading for puller/tensioner, snub, and fiber sites; hang travelers; install guard poles; install snub anchors; set-up of wire pulling and tensioning equipment; helicopter sock-line; pull back hardline; install conductor, static, and fiber; conductor sagging to requirements; clip/dead end wire; attaching wire to towers; install conductor spacers; fiber splicing and testing; energization.	Frequency: Multiple occurrence per tower during span activity. Duration: from the completion of structure assembly to energization approximately 1.5 weeks per span. Conductor will be a permanent fixation. Crew: drum puller, haul trailers, tensioners, 30-ton cranes, boom truck, D-8 dozer with sag winches, 2-ton trucks, splicing trucks

Activity	Location of activity	Activity Components	Frequency, Duration, and Intensity of Activity ¹
			Intensity: Moderate
Cleanup and site reclamation	Areas of disturbance, as dictated in the Reclamation, Revegetation, and Monitoring Framework Plan which is provided as an appendix of the POD.	Recontouring and re-establishment of drainage patterns; erosion control devices; mulching; seeding.	<p>Frequency: Single occurrence; some reclamation sites may be monitored for multiple years as directed in the Reclamation, Revegetation, and Monitoring Framework Plan</p> <p>Duration: Cleanup and reclamation typically takes 2 to 4 months at each site</p> <p>Crew: bull dozer, front end loaders, dump trucks, seeding tractors, motor graders, hydroseeder, flatbed trucks</p> <p>Intensity: Moderate</p>
Operation and Maintenance Activities			
Maintenance access	Entire length of right-of-way	Travel on approved access roads and overland routes.	<p>Frequency: Conducted on an as -needed basis as specified in the POD</p> <p>Duration: Inspection of the entire transmission-line system would be conducted three times annually</p> <p>Intensity: Low</p>
Transmission-line patrols, climbing inspections, structure and conductor inspection and maintenance, insulator washing in selected areas as needed	Entire length of right-of-way	Travel on approved access roads and overland routes; helicopter use; water spraying.	<p>Frequency: Conducted on an as -needed basis, as specified in the POD</p> <p>Duration: Typically 1 to 2 days per site</p> <p>Intensity: Low</p>
Vegetation management (i.e., noxious weed control; removal of tall vegetation)	In transmission-line right-of-way; wire and border zones as needed.	Travel on approved access roads and overland routes; mechanical vegetation removal; chemical vegetation treatment; noxious weed control.	<p>Frequency: Conducted on an as -needed basis, typically once every 5 to 10 years for the life of the Project.</p> <p>Duration: Typically 2 to 3 days per site</p> <p>Intensity: Low</p>

Activity	Location of activity	Activity Components	Frequency, Duration, and Intensity of Activity ¹
Emergency maintenance	Entire length of right-of-way	Travel on approved access roads and overland routes; overland access	Frequency: Conducted on an as-needed basis and coordinated with the land-management agency and landowners Duration: Duration of activities similar to relevant construction activities Intensity: Low
Operations access and access road repairs	Entire length of right-of-way; repairs as needed	Travel on access roads; overland travel; access road re- grading, re-surfacing	Frequency: Conducted on an as -needed basis, as specified in the POD Duration: Duration of activities similar to relevant construction activities Intensity: Moderate
Decommissioning Activities			
Decommissioning Activities	Entire length of right-of-way	Deconstruction and removal of towers, lines and foundations to two feet below ground level. Restoration of access roads and pads to original topography where possible	Frequency: one time, following usefulness of the system and/or the termination of the lease agreement. Duration: similar progression of crews and equipment as the creation of pads, roads and laydown yards. Intensity: High Crew: similar to equipment and crew used during clean up and reclamation.

2.1.2 Preconstruction

Following identification of the Agency preferred route and other land access permission, the project construction contractor will conduct structure foundation testing, soil borings, and other geotechnical investigations along the transmission line route and at the SCS. Borings generally will be 4 inches in diameter and excavated using truck-mounted drill rigs. The boring holes will be backfilled with excavated material upon completion. Access will be along existing roads where possible. Where there are no existing roads, trucks will follow the access routes to be used during construction.

Other preconstruction activities will include environmental surveys, final design and micrositeing, permitting, contracting, and material procurement.

2.1.3 Construction

Construction of the transmission line(s) will include the following sequence of activities:

- surveying and staking the transmission centerline, structure locations, environmental cultural resources sensitive areas, other project features, and work areas;
- upgrading or constructing short- and long-term access roads;
- clearing and grading the structure sites, and short- and long-term work area;
- excavating and installing foundations;
- assembling and erecting structures with short- and long-term work areas;
- stringing conductors and shield wires;
- installing counterpoise (structure grounds), where needed;
- post-construction cleaning up; and
- constructing the SCS and associated power connection to the distribution line.

At most structure locations and other sites along the transmission line route, each of these activities will take from a few hours (e.g., surveying and staking) to a few days (e.g., installing foundations, erecting structures). The following are estimates of the number of days that will be required at each structure to complete the specified activity (the range in days depends on the type of structure, with self-supporting lattice towers generally taking longer than other structure types):

- Development of access roads and work area pad: 1 day
- Foundation installation: 3–6 days
- Structure erection: 2–7 days
- Wire stringing: 6 days (for a section of the line)
- Restoration: 1–2 days

Each major construction activity listed above generally will occur within a few days of the preceding activity (weather and other restrictions permitting). Thus, although construction of the entire transmission line will take about 19 months (BLM 2018, Table 2.2-27), work will occur at each structure or section of the route during a series of short-duration activities most of which will be completed over a few weeks to a few months. However, at some sites, such as the SCS, staging and storage areas, and concrete batch plants, work will occur for longer, continuous periods.

About 1,325 acres will be disturbed for construction and operation of the transmission line (**Table 3**). Up to about 705 acres of disturbance will be temporary, and those areas will be reclaimed and not further disturbed following construction. About 655.5 acres of access roads and other long-term disturbances will be required for operation of the transmission line.

Access Roads – Access to the ROW will be along existing roads and trails, such as those associated with nearby transmission lines and pipelines, to the extent practicable. Where necessary:

- existing roads or routes will be upgraded to allow sufficient access at a total travel surface width of 18 feet maximum (16-foot-wide travel surface with 2-foot ditches/berms),
- a new centerline access road (18-foot-wide travel surface) will be created within the ROW, and
- spur roads will be cleared or overland travel will be used to access structure sites.

Clearing and Grading – During or following development or improvement of access roads, the construction contractor will prepare structure sites and temporary use areas required for construction of the transmission line. Typical equipment used for this work will include bulldozers, motor graders and rollers or compactors.

Temporary use areas such as material staging areas, laydown yards, and batch plants will be located on previously disturbed areas when possible and will be reclaimed following the completion of construction. Material laydown yards and staging yards would be utilized during initial construction activities through the completion of construction. Material staging areas are currently identified in Tonopah, Quartzsite, Salome and Blythe. Material laydown areas will be within the ROW or adjacent. In some locations, staging and laydown areas will require only minimal site preparation.

Concrete batch plants will be located as needed along the route. Most or all of those sites will be located within or near material laydown or fly yards, and will be graded and temporarily covered with gravel or other stabilization means.

Table 3. Area (acres) to be Disturbed for Construction and Operation of the Transmission Line

Project Component	Short-term Disturbance	Long-term Disturbance	Total ¹
Access Roads		430.8	430.8
Material Staging Areas	34.5		34.5
Fly Yards	33.4		33.4
Batch Plants ²	-	-	-
Structure Foundations and Erection	468.6	41.1	436.6
Wire Stringing (snubbing and pulling sites)	167.4		167.4
Crossings (roads, transmission/power lines, water)	53.3		53.3
Series Compensation Station		1.7	1.7
Distribution Lines	0.8	<0.1	0.8
Total	758	473.7	1,190.5

¹ Some long-term disturbances (e.g., structure foundations), will be within short-term disturbance areas and totals therefore are not additive.

²Included in Material Staging areas

Pulling and tensioning sites will be created at every angled dead-end that exceeds 30 degrees along the transmission line route. Pulling and tensioning sites that double as snub sites will be created within the ROW about every 3 miles. Each site will be about 2.5 acres and will be used to install the conductors and other wires on structures.

Where possible, topsoil will not be removed or leveled at temporary use areas. Where sites must be leveled or cleared because of soil or topographic conditions, topsoil will be removed and stored separately.

Foundations and Structures – The transmission line will be constructed using lattice and monopole steel structures (BLM 2018, Appendix 7 Figure 2.2-15). Monopoles will be used where the Project parallels an APS 69-kV line near the Delaney Substation at the eastern end of the line. They also could be in active agricultural areas and at the entrance to the two substations. Lattice structures, including self-supporting four-legged tangent and dead-end structures, guyed V structures, and two-legged H-frame structures, will be used elsewhere. Of a current estimate of 426 structures, 280 will be self-supporting lattice structures, 108 will be guyed structures, and 38 will be H frame structures. Typical equipment used for this work will include augers, a bulldozer, wagon drills, front-end loaders, flatbed trucks with booms, 75/100-ton cranes, carry-alls and 2-ton trucks.

The structures will be between about 72 and 195 feet tall, depending on the span length, and most will be shorter than 130 feet. The typical span length will be 1,200 feet, and could vary from about 600 to 2,100 feet. There will be three to eight structures per mile, depending on the structure type, topography, and angles of the route. Where the TWL transmission line is to be located adjacent to an existing transmission line, new structures will be located adjacent to existing structures where possible.

The conductors will be installed in a horizontal configuration (i.e., at the same height) on all structures except monopoles (on which they will be parallel and/or vertical). The static wire and ground wire will be about 30 feet above the conductors at the top of the structures.

Each structure type requires specific foundation configurations. Because of soil conditions in the region (e.g., loose upper soils, shrink-swell concerns, and collapsing soils), deep foundations and spread footers generally will be used for this project. The self-supporting lattice structures will have four foundations, which will either be cast-in place concrete, a precast foundation, micro-pile anchor/foundation, or grillage foundation (i.e., buried galvanized steel members designed to resist foundation loads). H-Frame structures will have two foundations, comprised of the same materials. The steel monopoles will have one foundation, which will either be cast-in-place concrete or a pre-cast foundation.

The guyed V structures will have a center pier foundation and four anchors for the guy wires. The center pier will be either cast-in-place concrete, a precast foundation, or grillage foundation. Grouted soil, grouted rock, or disk anchors will be used for the guy anchors. Drilled anchor holes will be about 6 to 12 inches in diameter and range in depth from 10 to 40 feet. Disk anchor excavations will be about 6 feet-by-3 feet wide and about 10 to 15 feet deep.

Following completion of foundations, structure materials and subassemblies will be delivered to each site for final assembly. Truck-mounted cranes and other heavy equipment will be used to assemble and erect the structures. Temporary guard structures will also be installed at crossing of highways, other transmission lines, canals, and other structures to protect those structures during installation of the conductor wires.

Stringing – Following completion and testing of structures, and installation of the insulators from which the conductors will hang, the conductors and shield wires will be installed. Lightweight ropes first will be hung on temporary rollers suspended from the insulator using a helicopter or bucket truck. Those ropes and then a larger cable will be used to pull the conductors and other wires into place using specialized equipment located at pulling and tensioning sites. Numerous crews will then travel along the ROW to splice the conductors and shield wires, properly tension and sag the wires, clip them into place, and test the transmission line before energizing. Typical equipment used for this work will include a drum puller, haul trailers, tensioners, 30-ton cranes, a boom truck, a D-8 Cat with sag winches, 2-ton trucks and splicing trucks.

SCS and Substations – A new SCS will be constructed under or very close to the transmission line. This facility will be equipped with switchable banks of capacitors inserted in series with a line to compensate for the voltage drop in the line. The 2-acre site will be cleared of vegetation, covered with crushed rock, and fenced.

All upgrades required for interconnections at the Delaney and Colorado River substations will be within the boundaries of those substations. Those upgrades will take from 18 to 27 months to complete.

Cleanup and Revegetation – Soil stabilization and revegetation will be completed at all temporary use areas. Ruts and holes due to construction activities will be regraded. Disturbed surfaces will be reclaimed to as near the original contour of the land surface as possible. Erosion and sediment control devices will be installed along the ROW, as needed, to control surface water and minimize soil erosion. Temporary construction roads, not required for future maintenance access, will be reclaimed after construction of the Project is complete. Examples of temporary access roads include those to staging areas and puller/tensioner sites that will not be required for operation and maintenance once the temporary staging area is regraded and vegetated. Areas of soil compaction, including temporary roads and reclaimed existing roads, will be scarified (BLM 2018, Appendix 2B). Unless directed by a landowner, any rock placed on temporary use areas (material staging, laydown, and batch plant locations, for example) will be removed and the area reclaimed. Typical equipment used for this work will include bulldozers, front-end loaders, dump trucks, tractors with seeding equipment, motor graders, a hydroseeder and flatbed trucks with buckets.

Appropriate site-specific seed mixes for revegetation will be used for varying site conditions. Salvaged native plants will be used for revegetation, if appropriate, along with seeding using BLM-recommended and approved seed mixes. Preferably, seeding will occur during the months from November to March following transmission line construction. Specific details for revegetation activities will be described in the approved Construction POD prepared for this Project. This will include specific success criteria that must be met to demonstrate compliance with vegetation requirements.

2.1.4 Operation and Maintenance

The lease term in the BLM ROW grant will be 50 years, and a renewal could be granted at the request of DCRT and subject to BLM approval; thus, the anticipated operations and maintenance duration is 50 years.

Regular inspection of transmission lines, substations, and support systems will be conducted throughout operation of the transmission system. Operation and maintenance activities will include transmission line patrols, annual inspections, structure and wire maintenance, and repairs of access roads.

DCRT will maintain roads required for maintenance and operation and authorized by the BLM or other landowners. A regular maintenance program could include, but will not be limited to, blading, ditching, culvert installation, and surfacing.

The transmission lines will be inspected annually or as required by using fixed-wing aircraft, helicopters, ground vehicles, all-terrain vehicles, or on foot. The transmission lines and substations will be inspected for corrosion, equipment misalignment, loose fittings, vandalism, and other mechanical problems. The need for vegetation management will also be determined during inspection patrols.

Maintenance and repairs will be performed as needed, generally using the same processes implemented and types of equipment used during construction. Temporarily disturbed sites will be reclaimed in accordance with project requirements.

Where vegetation presents a potential hazard, trees, tall cacti, and other vegetation will be trimmed or cut to prevent accidental grounding contact with conductors. Based on requirements for safe operation of transmission lines and the growth rate of common vegetation along the route, vegetation under the conductors will be trimmed as required to prevent interference with the overhead conductors.

Herbicides will be used to control weeds during and following construction and as applicable to retard regrowth of vegetation under the transmission line. In 2017, the BLM and USFWS completed a Section 7 consultation addressing vegetation control specifically for transmission lines that occur on BLM managed lands in Arizona (Young et. al 2017). This document guides the control of vegetation and use of herbicides along transmission lines in Arizona. A list of currently approved active ingredients in herbicides for the region can be found in Table 4 below. Herbicides approved by the BLM in California will be used in the California portion of the project ROW.

Any application of herbicides would be conducted according to the stipulations in the herbicide BA. After the mechanical removal of vegetation under transmission lines and near structures, herbicides will be used to slow or prevent regrowth. This will be accomplished using rubber-tired vehicles, including the use of all-terrain vehicles and on foot with back pack sprayers (Young et. al 2017). Herbicides will be applied in three general techniques: on stumps, to the basal area of shrubs, and directly to leaves. Special care will be taken concerning the application of herbicides in the vicinity of the Colorado River so as to avoid discharge into the water (Young et. al 2017).

Vegetation will be cleared under transmission lines to help prevent arching and/or contact with transmission lines. The removal and maintenance of vegetation within 20 feet of structures will help protect those structures from wildfire as well as prevent sparks from starting wildfire (Young et. al 2017).

Table 4. BLM Accepted Active Ingredients in Herbicides (Young et al. 2017)

Herbicide*	Trade Name (Example Commercial Formulations)
2,4-D	2,4-D
Aminopyralid	Milestone
Bromacil	Hyvar
Chorsulfuron	Telar
Clopyralid	Transline and Reclaim
Dicamba	Vanquish
Diuron	Karmex
Fluroxypyr	Vista
Glyphosate	Roundup, Rodeo, and Accord
Hexazinone	Velpar
Imazapic	Plateau
Imazapyr	Arsenal and Habitat
Metsulfuron Methyl	Escort
Picloram	Tordon
Sulfometuron Methyl	Oust
Tebuthiuron	Spike
Triclopyr	Garlon and Pathfinder

2.1.5 Termination, Reclamation, and Decommissioning

Should the ROW and facilities no longer be needed, the transmission lines and associated facilities will be decommissioned. On BLM-managed land, conductors, insulators, concrete pads for the SCS and associated facilities, and hardware will be dismantled and removed from the ROW. Transmission structures

will be removed and foundations broken off at least 2 feet below ground surface. All areas of permanent disturbance will be reclaimed.

Access routes and other sites disturbed during decommissioning will be reclaimed and revegetated. Soil will be de-compacted and sites will be returned to their original contour where possible, salvaged topsoil distributed, and water diversions and other erosion control measures established where necessary. An area-specific mix of native seeds will be planted using BLM-approved methods, and vegetation that had been salvaged and maintained in a nursery will be planted in accordance with established BLM standards. Revegetated sites will be monitored periodically to evaluate the effectiveness of erosion control measures, inventory and control weeds, compare the progress of vegetation recovery to predetermined reclamation success criteria, and identify any additional treatment required to achieve those criteria.

2.2 Action Area

The Section 7 regulations define “action area” as “all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action” (50 CFR § 402.2a).

The action area during the construction and decommissioning phases of this project includes all areas where construction and decommissioning activities will occur, including:

- The 200-foot-wide ROW and other associated work areas for construction of the 500-kV line on lands administered by the BLM, and other associated work areas along and near the transmission line required for the project and covered under other ROWs, easements, and agreements.
- Existing and new roads used to access the transmission line during construction and decommissioning. The action area will include existing and new roads; however, at the time of this analysis the final engineering design for the Project is not available and the exact locations of some of these Project features are not certain.
- The Delaney and Colorado River substations.
- Any areas adjacent to the project ROW where wildlife could be temporarily disturbed by noise and human presence or habitat could be temporarily altered by stormwater runoff or contaminants. For the purposes of analysis in this BA, that area is conservatively defined as an area 1 mile wide and centered on the transmission line (**Figure 1**).
- An area of 1,125 acres on Kofa NWR that is within 1 mile of project ROW (See Section 3.1, Figure 5).

The action area during the operations and maintenance phase includes:

- The area along and under the transmission line where wildlife could strike the structures, conductors, and other wires.
- Access roads to and along the transmission line, and locations where inspections, maintenance, vegetation management, and other activities will occur.

Because this BA addresses impacts that could occur throughout the entire life of the project, and because it is unlikely that new or different impacts will occur after the decommissioning phase, the project will not result in indirect impacts (i.e., those that occur later in time) or require consideration of those impacts when defining the action area. Thus, potential effects that could occur following construction and over the relatively long period of this project, such as the spread of weeds and an increase in human presence along and near the project ROW, are addressed as direct effects in Section 4.

2.3 Impact Minimization and Conservation Measures

Impact minimization and conservation measures that will be implemented for the project include:

- Design features and applicant proposed measures (APMs) proposed by DCRT (BLM 2018, Appendix 2A).
- Best management practices (BMPs) provided by BLM (BLM 2018, Appendix 2A).
- Mitigation measures (MMs) required by BLM in response to potential environmental impacts identified in the Draft EIS (BLM 2018, Appendix 2 Section 2.4).
- Conservation and management actions (CMAs) from the Desert Renewable Energy Conservation Plan and associated Land Use Plan Amendment to the California Desert Conservation Area Plan that must be implemented on BLM-administered land in California (BLM 2018, Appendix 2C).
- MMs required by the California Public Utilities Commission to comply with the California Environmental Quality Act (BLM 2018 Appendix 1C).

Appendix A lists a subset of the impact minimization and conservation measures for this project that are most applicable to avoiding or reducing impacts to threatened and endangered species and their habitat. Measures that are relevant to the species addressed in this consultation are included in the Biological Assessment and identified in Section 4 for each species. See the Project DEIS (BLM 2018) for a complete list and description of impact minimization and conservation measures.

Intentionally Left Blank

3. Status of Threatened and Endangered Species

This section summarizes information on the status and ecology of the species considered in this BA (Table 1).

3.1 Sonoran Pronghorn

Legal Status. The Sonoran pronghorn was listed as endangered throughout its range in 1967 (32 FR 4001). Critical habitat has not been designated.

Sonoran pronghorn in the following area were classified as a nonessential experimental population under Section 10(j) of the ESA in 2011 to reestablish pronghorn within their historic habitat in King Valley of Kofa NRW and the Barry M. Goldwater Range (76 FR 25593).

In Arizona, an area north of Interstate 8 (I-8) and south of I-10, bounded by the Colorado River on the west and I-10 on the east; and an area south of I-8, bounded by Highway 85 on the west, Interstates 10 and 19 on the east, and the U.S.-Mexico border on the south.

Most of the TWL transmission line route in Arizona is within the area designated for the nonessential experimental population; the only portion that is not is an approximately 23.5-mile-long section north of I-10 in the Harquahala Plain near the eastern end of the line (Figure 4). At its closest point, the centerline of the transmission line is within about 600 feet of the northwestern corner of Kofa NWR (Figure 5).

Nonessential experimental populations are treated as threatened for the purpose of Section 9 of the ESA (and thus the prohibitions on take do not automatically apply), and Section 10(j) allows the USFWS to adopt conditions necessary to conserve those populations. To comply with Section 7 of the ESA, federal agencies must treat a nonessential experimental population as threatened when the population is located on a NWR or lands managed by the National Park Service, and as proposed otherwise. Section 7(a)(4) requires federal agencies to confer with the USFWS on actions that are likely to jeopardize the continued existence of a proposed species. However, it is BLM policy to conferencing with the USFWS is required if an action is determined to likely adversely affect a nonessential experimental population (BLM 2008b).

Distribution and Abundance. Sonoran pronghorn historically occurred throughout parts of southwestern Arizona, northwestern Sonora, southeastern California, and northeastern Baja California (USFWS 2016, Figure 1). In southern Arizona, this subspecies likely was found as far east as the Santa Cruz River basin, and as far north as about the current location of I-10. In California, their range extended into, and possibly west of, the Imperial Valley.

The population of Sonoran pronghorn in Arizona was declining by the mid-1800s due to harvesting, livestock grazing, and habitat changes (USFWS 2016). By the 1920s, there were about 100 individuals in the U.S. In 1993–1994, the estimated populations of Sonoran pronghorn in the U.S. and Mexico were 280 and 300, respectively. During a severe drought in 2002, the population in Arizona had declined to about 21 individuals; however, by 2014, that number had increased to over 200 (USFWS 2016, 2017).

The current recovery plan (USFWS 2016) estimated that Sonoran pronghorn currently occupy about 12 percent of their historic range in the following five geographically isolated populations:

Cabeza – In southeastern Arizona, generally located on federal lands (e.g., Cabeza Prieta NWR, Organ Pipe Cactus National Monument, and Barry M. Goldwater Range) south of I-8, west of Highway 85, and east of the Copper and Cabeza Prieta mountains.

Kofa – A nonessential experimental population established in 2013 from individuals released into King Valley of Kofa NWR.

Sauceda – A nonessential experimental population established in 2015 from individuals released in the Barry M. Goldwater Range East (east of Highway 85).

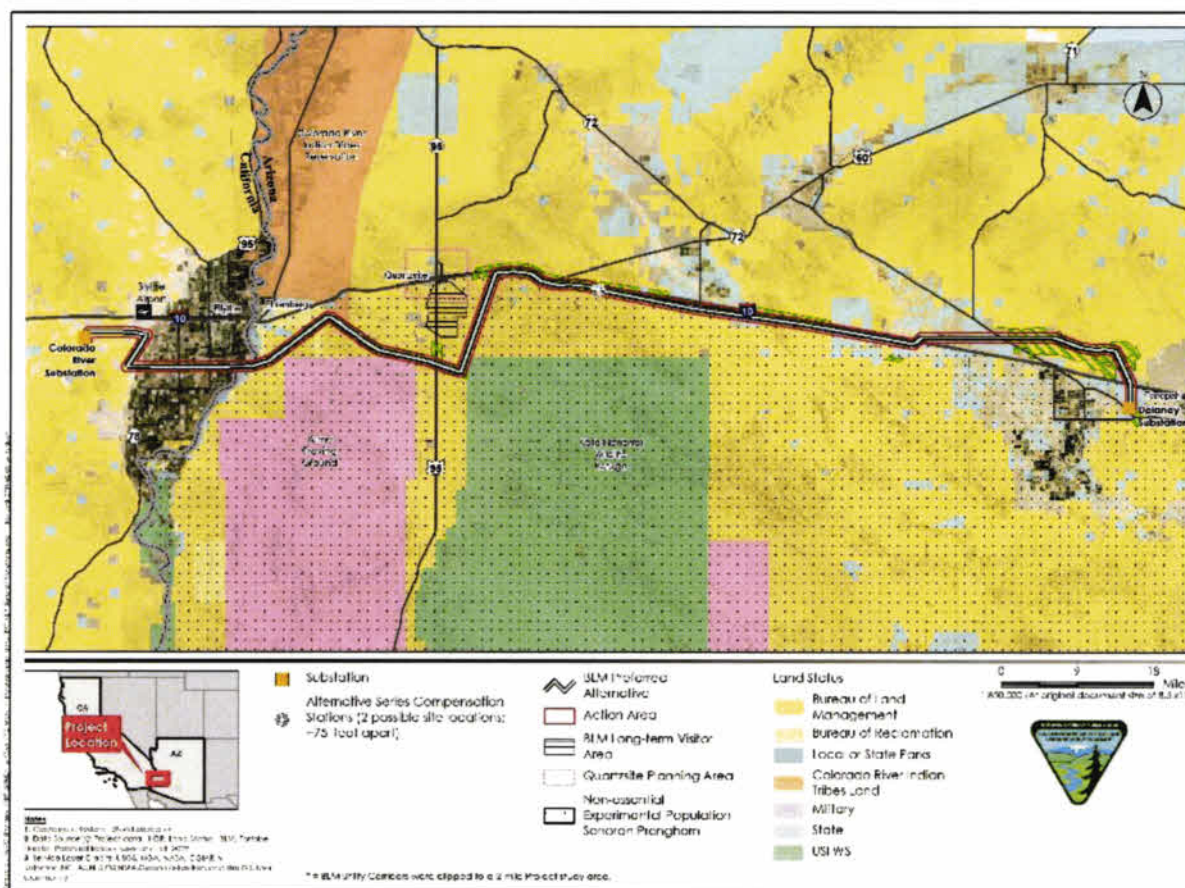
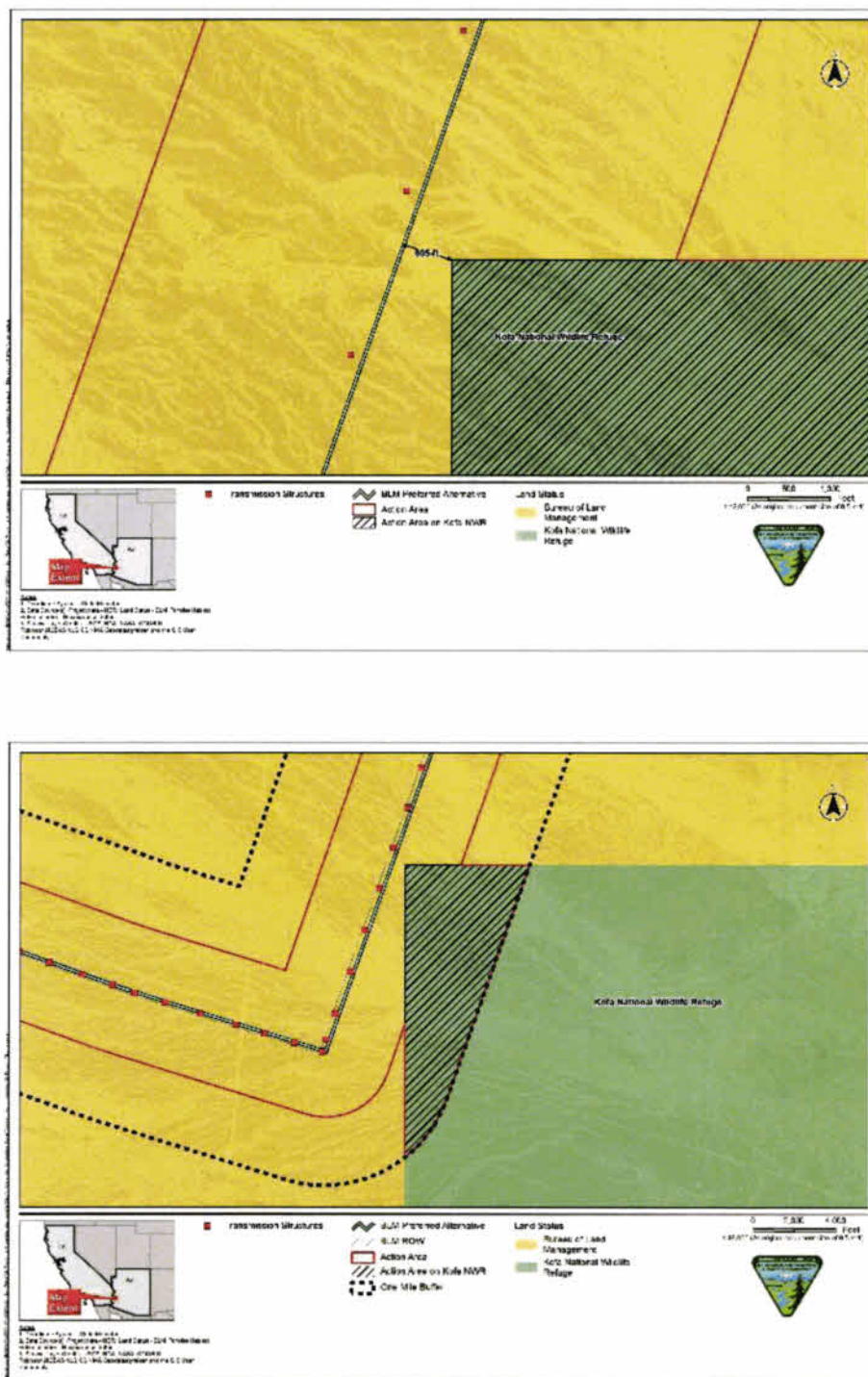


Figure 4. Location of TWL Transmission Line Route and the Sonoran Pronghorn Nonessential Experimental Population.

Quitovac – Population in northwestern Sonora, Mexico, south and east of Mexico Highway 8 and west and north of Caborca, Sonora, near Quitovac, Sonora, Mexico.

Pinacate – Population in northwestern Sonora, Mexico, in the in the El Pinacate y Gran Desierto de Altar Biosphere Reserve of northwestern Sonora, Mexico.

Habitat. Sonoran pronghorn are most commonly found on relatively flat, open terrain and gentle slopes and hills within about 6 miles of water, and are infrequently found on steep slopes and in mountains. Valleys within their range in the U.S. generally are dominated with stands of creosote bush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*) that are interspersed with ephemeral washes having a low overstory of blue palo verde (*Parkinsonia microphylla*), ironwood (*Olneya tesota*), and other shrubs and small trees. Foothills and mountain, especially in more northern parts of their range, have more diverse vegetation dominated by leguminous trees and cacti. In those areas, Sonoran pronghorn have been observed more frequently where chainfruit cholla (*Cylindropuntia fulgida*) is abundant (deVos and Miller 2005; Hervert et al. 2005).



Threats. The primary threats to the recovery of the Sonoran pronghorn include habitat loss; habitat fragmentation and barriers to movement; changes in habitat quality from a reduction in access to water, reduced forage quality, and altered vegetation structure; human activities (e.g., border activities, recreation, military testing and training, and others); high mortality (from disease, vehicle collisions, and other factors) (USFWS 2016), and drought and climate change.

Presence within the Action Area. Following the May 2011 publication of a Final Rule establishing a nonessential experimental population (76 FR 25593), a pen for captive breeding of Sonoran pronghorn and five permanent water sources were established in King Valley on Kofa NWR. That pen is about 30 miles south of the portion of the TWL transmission line route along I-10, and about 26 miles south-southeast of the southernmost point of the route in La Posa Plain. Pronghorn from that pen and from the Cabeza Prieta population were released into King Valley starting in 2012–2013, and by 2016, 45 individuals had been released. As of January 2017, there were about 70 animals in this nonessential experimental population on and near Kofa NWR (USFWS 2017). In January 2019 pronghorn were released into the east arm of Yuma Proving Grounds. At its closest point, the transmission line will be less than 0.5 mile west of the northwest corner of Kofa NWR.

Some of the released pronghorn were radio-collared, and the movements of those individuals have been monitored periodically by the Arizona Game and Fish Department. **Figure 6** shows, which was prepared and provided by the Arizona Game and Fish Department, shows the locations of radiomarked individuals in the Kofa population of Sonoran pronghorn up to April 2019. Most individuals in that population have remained in and near King Valley on Kofa NWR and the Yuma Proving Grounds, generally 20 to 40 miles south of the southernmost point of the TWL transmission line route in the La Posa Plain, and farther from the route along I-10. In addition, individuals have been documented in the northern portion of Kofa NWR and adjacent BLM land, including along both the eastern and western ends of the pipeline road and 500 kV transmission line that bisect the northern part of the refuge (Erin Fernandez, USFWS, personnel communication, February 11, 2019). Some individuals have moved relatively long distances from King Valley. For example, a male pronghorn spent about seven months west of Highway 95 near Stone Cabin, about 18–20 miles south of the transmission line route in southern La Posa Plain, and others have moved outside of the Refuge and into or through the Palomas Plain, the southern Ranegras Plain, and north of and near the Little Horn and Eagletail mountains (AGFD 2014, 2015, 2016; Daniel Stewart, Yuma Proving Grounds, Personal Communication, October 25, 2018).

O'Brien et al. (2005) developed models of potential Sonoran pronghorn habitat within the boundaries of the nonessential experimental population, including along much of the TWL transmission line route in Arizona. Those models identified much of the area along and near I-10 in the Ranegras and Harquahala plains that will be crossed by the transmission line as non-habitat or as having a low probability of use by pronghorn. The models identified the area to be crossed in the La Posa Plain as a large contiguous block of potential habitat. In that area, the transmission line will traverse south-southeast along the western edge of the Plomosa Mountains for 18 miles. That area has large areas of desert pavement bisected by desert riparian washes (**Figure 7**). The transmission line route then parallels the Devers-Palo Verde 500-kV transmission line to the east-northeast into the Dome Rock Mountains and across Copper Bottom Pass. The La Posa Plain in this region is bisected to the north-south by US93 and by the Devers-Palo Verde line to the east west, and there are numerous roads and trails in that area that are used for recreation, especially during the winter.

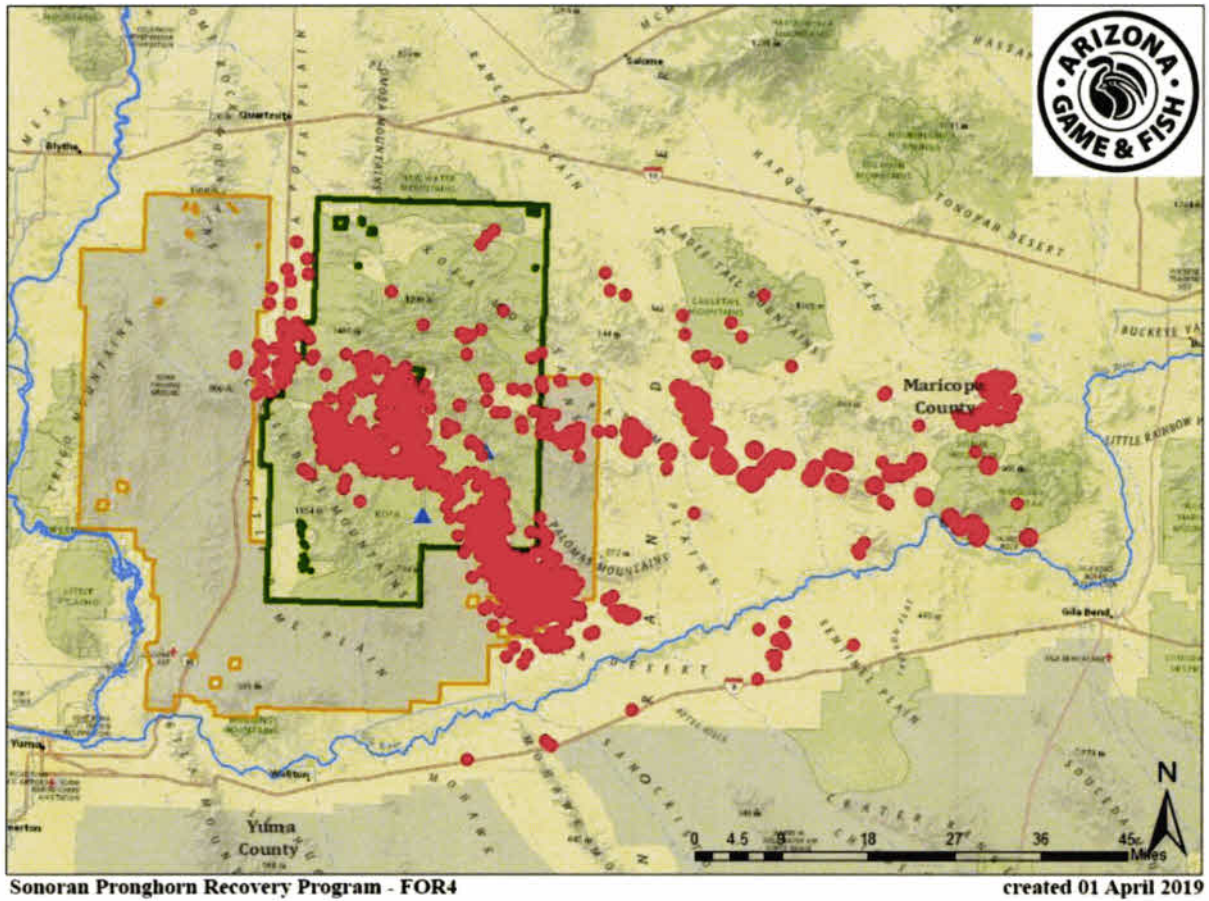


Figure 6. Locations of Sonoran Pronghorn in the Kofa Population



Figure 7. La Posa Plain east (top) and west (bottom) of U.S. 95 along the route of the TWL transmission line.

3.2 Yellow-billed Cuckoo

Legal Status. The western DPS of the yellow-billed cuckoo was federally listed as threatened in 2014 (79 FR 59992). Southwestern Arizona and southeastern California are within the breeding range of that DPS.

Critical habitat was proposed for the western DPS of the yellow-billed cuckoo in 2014 (79 FR 48548); a final rule designating critical habitat for this DPS has not been published. The location where the TWL transmission line will cross the Colorado River is within proposed critical habitat unit CA/AZ 1 (Colorado River 1). This 78,961-acre unit is a 139-miles-long continuous segment of the Colorado River from the U.S.-Mexico international border to the town of Earp in La Paz County, Arizona. The unit “has a small existing breeding population of western yellow-billed cuckoos, but has a great potential for riparian habitat restoration, which is currently being implemented. Western yellow-billed cuckoos are colonizing these restoration sites as soon as they provide suitable habitat. It provides a movement corridor to habitat patches farther north” (79 FR 48561). In their proposal to designate critical habitat, the USFWS stated they are considering excluding from that designation habitat that may occur within the Lower Colorado River Multi-Species Conservation Program (LCR MSCP) planning area (79 FR 48576). The purpose of that plan is to mitigate effects of operation of the Colorado River by the U.S. Bureau of Reclamation and to conserve species that occur along that river. The LCR MSCP includes the area to be crossed by the TWL route. At the location where the TWL route crosses the Colorado River, proposed critical habitat is about 0.8-miles-wide, and extends from approximately the channelized western bank of the river to the eastern edge of the floodplain (**Figure 2**).

Distribution and Abundance. Historically, the western yellow-billed cuckoo nested in suitable riparian habitat from southwest British Columbia, Washington, Oregon, southwestern Idaho, California, Nevada, northern Utah, central and western Colorado, Arizona, New Mexico, and western Texas, and south and west to southern Baja California, Sinaloa, and Chihuahua, Mexico. Both their range and abundance have been reduced substantially—primarily by extensive loss of riparian habitat due to development, agriculture, and construction of dams (Johnson 2009). In the southwestern U.S., the western yellow-billed cuckoo currently is known to nest in Arizona, California, New Mexico, and extreme western Texas, with small nesting populations also documented in Nevada and Utah. Areas with known populations include portions of the Sacramento and Kern rivers in California; the Verde, San Pedro, Santa Cruz, Bill Williams, and Gila rivers, and Cienega and Sonoita creeks in Arizona; and the lower Colorado River (LCR MSCP 2008). The largest remaining breeding populations in the lower Colorado River in 2007 was in the Bill Williams NWR (LCR MSCP 2008).

Surveys for nesting yellow-billed cuckoos are conducted annually along the lower Colorado River as part of the LCR MSCP. In 2006 and 2007, 163 to 180 detections of western yellow-billed cuckoos were made during surveys of the lower Colorado River; most of those were in the Bill Williams River NWR (Johnson et al. 2007, 2008). From 2008 to 2012 detections increased in areas along the lower Colorado River where plantings and flood irrigation were being conducted to restore nesting habitat, and decreased in the Bill Williams River NWR due to drought. Important restoration sites with high detections of cuckoos included the Palo Verde Reserve, about 10 miles north of where the TWL transmission line is to cross the Colorado River, and in Cibola NWR and Cibola Valley Conservation Area, about 15 miles south of the TWL river crossing (McNeil et al. 2013). In 2012, there were 74 detections of cuckoos at Palo Verde Reserve and 41 at the Cibola sites (McNeil et al. 2013). Detections at those locations increased from 2013 to 2018, with a total of 159 detections at Palo Verde and 57 at the Cibola sites in 2018 (Parametrix and Southern Sierra Research Station 2018). Those two areas are the closest locations to the TWL river crossing where nesting by western yellow-billed cuckoos have been documented as part of the LCR MSCP monitoring program.

Habitat. Western yellow-billed cuckoos occur from southern Canada south to Mexico (USFWS 2014a) at elevations up to about 7,000 ft. They nest nearly exclusively near water in large, contiguous patches of native woodlands dominated by cottonwoods (*Populus* sp.) and willows (*Salix* sp.) (Johnson 2009). They occupy patches of suitable habitat greater than 200 ac in size but have been found in patches of suitable habitat as small as 40 ac (USFWS 2014a). They prefer floodplains greater than 100 m wide with a slope of less than three percent (USFWS 2014a). Surveys conducted in 2008 documented breeding cuckoos solely

in riparian habitat with large, unobstructed stands of native trees; cuckoos were not found in areas with small, isolated patches of vegetation or those dominated by exotics such as tamarisk (*Tamarix* sp.) (Johnson et al. 2008). Additional research conducted along the lower Colorado River found sites occupied by cuckoos were characterized by sparser shrub layers, taller trees, and thicker cover in the upper and middle layers of the canopy; unoccupied sites consistently had very little canopy and higher densities of small trees, primarily nonnative tamarisk. Based on those and other studies, cuckoos are thought to prefer riparian areas typified by native species with a multistoried structure and high, dense canopies for nesting, in addition to an open understory for foraging (Johnson 2009; McClure et al. 2015).

The USFWS has identified the following three primary constituent elements of proposed critical habitat for yellow-billed cuckoos (79 FR 48554).

1. Riparian woodlands – Riparian woodlands with mixed willow-cottonwood vegetation, mesquite-thorn-forest vegetation, or a combination of these that contain habitat for nesting and foraging in contiguous patches that are greater than 325 feet in width and 200 acres or more in extent.
2. Adequate prey base – Presence of a prey base consisting of large insect fauna (e.g., cicadas, caterpillars, katydids, grasshoppers, large beetles, dragonflies) and tree frogs for adults and young in breeding areas during the nesting season and in post-breeding dispersal areas.
3. Dynamic riverine processes – River systems that are dynamic and provide hydrologic processes that encourage sediment movement and deposits that allow seedling germination and promote plant growth, maintenance, health, and vigor (e.g. lower gradient streams and broad floodplains, elevated subsurface groundwater table, and perennial rivers and streams).

There is not much known about migration, stopover, or dispersal habitat within the breeding range of cuckoos; however, the USFWS has concluded that these activities require the same types of habitat as breeding and foraging (79 FR 48551). Parametrix and Sierra Research Station (2018, among other LCR MSCP reports) note value in “full life cycle approach” to monitoring cuckoos. Migrating cuckoos have been found in coastal scrub, second-growth forests and woodlands, hedgerows, forest edges and in smaller riparian patches than those used for breeding.

Threats. Threats to the yellow-billed cuckoo include loss or fragmentation of high quality riparian habitat suitable for nesting; habitat loss and degradation from alteration of watercourses, associated riparian vegetation, and other features essential to the conservation of the species; conversion of native riparian vegetation to nonnative species, agricultural activities and livestock grazing, pesticide use, and predation (79 FR 48548, LCR MSCP 2008).

No surveys have been done to date regarding avian mortality from collision with the adjacent transmission line in the vicinity of the Colorado River. Collision with power lines may pose a threat to this species and other avian species discussed below that may move through the area especially during migration.

Presence within the Action Area. To the best of our knowledge and based on monitoring data under the LCR MSCP cuckoos do not breed or nest near the location where the TWL transmission line will cross the Colorado River; however, monitoring data indicates nesting and breeding are occurring in suitable habitats to the north and south of the Project. The closest cuckoos have been documented nesting/breeding include Palo Verde Reserve (10 miles north of the Project Area) and Cibola NWR (15 miles south of the Project Area) where extensive monitoring occurs under the LCR MSCP.

There is no suitable nesting habitat for yellow-billed cuckoos within or near the location where the TWL transmission line will cross the Colorado River or elsewhere within the action area and the project will not impact breeding or nesting yellow-billed cuckoos (**Figures 8 and 9**). The river at that location is channelized has a thin stand of shrubs and short trees on the steep river banks, and lacks dynamic riverine processes. There is a road and cultivated fields are immediately west of the river at the crossing. Proposed critical habitat occurs along the Colorado River within the action area (**Figures 2 and 8**). As described below,

conditions in that area do not support, or are of poor quality for supporting, the primary constituent elements of proposed critical habitat listed above.

The floodplain on the eastern side of the Colorado River at that crossing site is about 0.7-miles-wide, and is vegetated with sparse to moderately dense stands of tamarisk and saltbush (*Atriplex* sp.), in addition to other low shrubs. There are individual and small groups of honey mesquite (*Prosopis glandulosa*) along the eastern edge of the floodplain, but there is no overstory of cottonwoods or other native riparian tree species. Because of the lack of overstory and consequent xeric conditions in this floodplain, there likely is a low abundance of prey relied upon by yellow-billed cuckoos.

The floodplain has no surface water connection to the Colorado River, except possibly during extremely high flows. There is no standing water in that floodplain, and the only water channels are ephemeral streams that carry water from the foothills to the east.

Cuckoos have been described as nomadic before and after the breeding season (as reviewed by McNeil et al. 2015). In contrast, McNeil et al. (2013) documented that radiomarked individuals stayed at or near their capture site until leaving that site at the end of the nesting season. It is likely that they travel through or near the action areas as they move along the Colorado River among widely distributed patches of suitable nesting habitat, especially during spring and fall migration and likely pass through the floodplain and the surrounding region along and near the river crossing. Because monitoring of cuckoos in the lower Colorado River has been focused in nesting habitat there is no data to present on number of cuckoos using the Action Area for foraging or migration. Based on estimates of cuckoos documented at both Palo Verde Reserve and Cibola NWR it is likely cuckoos use the Colorado River corridor and may use adjacent uplands during foraging and migration. Cuckoos captured and monitored from the Palo Verde Reserve indicate cuckoos use a variety of habitat and land cover at spring and fall stopover sites, including desert washes, mangrove forests, and mesquite woodland (Parametrix and Southern Sierra Research Station 2018). Based on the overall number of detections and observations along the Colorado River and the importance of riparian habitat and freshwater marshes present along the Colorado River it is likely that western yellow-billed cuckoos use this area as a migration corridor. Audubon in the identification of Important Bird Areas to the north of the Project Area state *the river is emerging as one of the most important corridors in the state for northbound migrants in spring, the agricultural fields to the west of Blythe (esp. along Lovekin Blvd.) support exceptionally high numbers of migrant shorebirds when flooded* (<https://www.audubon.org/important-bird-areas/lower-colorado-river-valley>) supporting the consideration in this BA that avian use for migration and foraging may occur.

3.3 Southwestern Willow Flycatcher

Legal Status. The southwestern willow flycatcher was federally listed as an endangered species in 1995 (60 FR 10694). Critical habitat initially was designated for the southwestern willow flycatcher in 1997 and was later modified in both 2005 (70 FR 60886) and 2014 (78 FR 344). Critical habitat is not designated within or near the action area along the lower Colorado River.

Distribution and Abundance. Southwestern willow flycatchers are neotropical migrants that breed during the late spring through summer throughout the American southwest. Breeding habitat for the species presently includes southern California, southern Nevada, southern Utah, Arizona, New Mexico, and southwestern Colorado; historically, western Texas and extreme northwestern Mexico also were included. Southwestern willow flycatchers migrate south by the end of September to winter in Mexico, Central America, and northern South America (LCR MSCP 2008). A sizable population of flycatchers may once have existed along the most southerly stretches of the lower Colorado River according to both museum collections and historical breeding records.

Surveys for nesting southwestern willow flycatchers have been conducted along the lower Colorado River since 1996 for the LCR MSCP and other projects. Numerous sites along the section of the river from the international border to the Bill Williams River have been and continue to be periodically surveyed, including Cibola NWR, a site near Ehrenberg, and the Palo Verde Reserve (McLeod et al. 2019). Willow flycatchers

have been documented annually in suitable riparian habitat along that portion of the river, but no nests have been located along the lower Colorado River south of the Bill Williams River in over 80 years (Unitt 1987, McLeod et al. 2019).



Figure 8. TWL Transmission Line crossing of the Colorado River. Black – transmission center line, red – action area boundary, dark red – structure (tower) work areas, brown – access roads, yellow – western yellow-billed cuckoo proposed critical habitat.



Figure 9. Location where TWL transmission line will cross the Colorado River (top) and floodplain immediately east of that crossing (bottom). The TWL transmission line will be constructed about 200 feet north of the transmission line shown in the photographs.

Habitat. Dense riparian habitats dominated by native cottonwoods and willows or by nonnative tamarisk, with microclimatic conditions dictated by the local surroundings, are required for nesting. Other plant species closely associated with suitable nesting habitat include, seepwillow (aka mulefat; *Baccharis* spp.), boxelder (*Acer negundo*), stinging nettle (*Urtica* spp.), blackberry (*Rubus* spp.), cottonwood (*Populus* spp.), arrowweed (*Tessaria sericea*), and Russian olive (*Eleagnus angustifolia*) (USFWS 2002a). Conditions such as saturated soils, standing water, or nearby streams, pools, or cienegas influence the microclimate and density vegetation component, and therefore are important components of suitable nesting habitat (USFWS 2002a, McClure et al. 2016). Height of vegetation within the patch is most often between two and 30 meters; however, an understory of dense vegetation that occurs between 2 and 4 meters appears to be especially important for nesting (USFWS 2002a). Habitat not suitable for nesting may be used for migration and foraging. The dense riparian vegetation required for breeding historically was rare and sparsely distributed, and now is even rarer (68 FR 10485). The nearest sites to the action area where this species is consistently found and monitoring occurs are Palo Verde Ecological Reserve and Cibola NWR. Broadcast surveys conducted at those sites in 2017 detected southwestern willow flycatchers; however, none of the flycatchers displayed territorial behavior indicative of residency in those locations (McLeod et al. 2018).

Threats. Threats to the southwestern willow flycatcher include habitat loss, degradation, fragmentation, and alteration; predation; brood parasitism by brown-headed cowbirds (*Molothrus ater*); disease; and environmental toxins. Historically, water developments that altered flows in the rivers and streams used by the species were the primary threat. However, with riparian areas presently limited, and with regrowth difficult due to changes in flows, fire has become a significant risk to remaining habitats. In addition, human disturbances at nesting sites may result in nest abandonment (USFWS 2002a). Along the lower Colorado River, much of the riparian habitats used for breeding have been altered from dense stands of native woodlands typified by cottonwoods and willows to isolated patches dominated by tamarisk (LCR MSCP 2008 and BIO-WEST 2005).

Presence within the Action Area. There is no suitable nesting habitat within or near the location where the TWL transmission line will cross the Colorado River or elsewhere within the action area, and southwestern willow flycatchers currently are not known to nest in the section of the Colorado River from the Bill Williams River to the international border. The river at the location where the TLW transmission line will cross the river is channelized, and has a thin stand of shrubs and short trees on the steep river banks (**Figures 8 and 9**). The floodplain on the eastern side of the Colorado River at that crossing site is about 0.7 mile wide, and is vegetated with sparse to moderately dense stands of tamarisk and saltbush (*Atriplex* sp.), in addition to other low shrubs. There are no dense stands of willows, and the stands of tamarisk are in a relatively dry, upland setting. There is no surface water connection between the river and floodplain, surface soil in that floodplain is not saturated, and the only water channels are ephemeral streams that carry water from the foothills to the east. A road and cultivated fields are immediately west of the river at the crossing.

Southwestern willow flycatchers travel along the Colorado River among widely distributed patches of suitable habitat, especially during spring and fall migration and likely pass through the floodplain and surrounding region along and near the river crossing. For example, over 600 migrant willow flycatchers (subspecies unknown) were detected along the lower Colorado River in 2004, primarily in areas where nesting is not known to occur (76 FR 50554). Although they typically utilize riparian habitat during migration, they are also found foraging in surrounding areas in a wide variety of vegetation and habitat types (Sogge et al. 2010). This may include agricultural fields and scrub habitat that surround the Colorado River in the vicinity of the project area. As stated above for cuckoos, the Colorado River may be important corridor for migrating and foraging willow flycatchers (<https://www.audubon.org/important-bird-areas/lower-colorado-river-valley>).

There is no designated critical habitat for the southwestern willow flycatcher within the action area. The nearest designated critical habitat occurs approximately 40 miles north of the TWL transmission line route.

3.4 Yuma Clapper Rail (Yuma Ridgway's Rail)

Legal Status. Yuma clapper rails (*Rallus longirostris yumanensis*) were federally listed as endangered in 1967 (32 FR 4001). Critical habitat has not been designated for this species.

Note that the taxonomic classification of *R. longirostris yumanensis* has been modified, with all subspecies of clapper rails in parts of western Mexico, southern California, Arizona, and elsewhere in the lower Colorado River basin, including *yumanensis*, now considered Ridgway's rail (*Rallus obsoletus*) (BirdLife International 2016). To maintain consistency with past Federal regulatory evaluations and rules, this report continues to reference the taxonomic classification used by the USFWS to evaluate and list this species as endangered.

Distribution and Abundance. The distribution of Yuma clapper rails along the lower Colorado River prior to alteration of that river system is uncertain, although they likely occurred in backwaters, marshes, and other suitable habitat (USFWS 2010, LCR MSCP 2016). The construction of dams and agricultural drainages along the Colorado River is thought to have led to the creation of new marsh habitats, and thus the subsequent expansion of Yuma clapper rails in the region. Habitat also was expanded in extreme southeastern California through the creation of the Salton Sea in the early 1900s. Along the lower Colorado River, this subspecies is primarily found in scattered marshes from the Colorado River delta in Mexico, to Topock Marsh at the Havasu NWR, near Needles, California. The subspecies' current range now also extends north from the Virgin River and Beaver Dam Wash in Littlefield, Arizona and Mesquite, Nevada, respectively; the Muddy River near Overton, Nevada; and the Las Vegas Wash near Las Vegas, Nevada; south towards the Colorado River delta in Mexico; west towards the Salton Sea in southeastern California; and east in portions of the Gila, Salt, and Bill Williams river drainages and several other locations in central and southwestern Arizona. Most breeding Yuma clapper rails in the U.S. are year-round residents, although minor seasonal changes within their activity areas are common (LCR MSCP 2016). Population estimates based on survey detections for the U.S. for 10 years prior to 2014 fluctuated between 467 and 809 individuals (USFWS 2014b).

Habitat. The Yuma clapper rail is a marsh bird and generally is found in freshwater and alkali marshes dominated by stands of emergent vegetation interspersed with areas of open water and drier, upland benches. This subspecies prefers mature marsh stands along margins of shallow ponds with stable water levels. Nests often are in the base of a shrub, and are near upland areas in shallow sites dominated by mature vegetation. In winter, Yuma clapper rails typically move into areas with different cover types, thus showing a preference for denser cover than in the summer. An important trait of habitat is the presence of emergent cover; plant species composition and/or marsh size are not as essential (LCR MSCP 2016). Habitat studies in Arizona found that sites with high coverage by surface water, low stem density, and moderate water depth were used for foraging during the nesting season, while sites with high stem density and shallower water near shorelines were used for nesting (LCR MSCP 2016). Habitat used in early winter (November–December) generally was characterized by lower emergent stem density, basal coverage, and ground coverage; less distance to water; greater overhead coverage by vegetation, distance to adjacent uplands, distance to vegetative edges, water depth, and water coverage; and taller emergent plants than did randomly selected sites. Year-round rail habitat was typified by low stem densities and little residual vegetation. Ideal habitat was described by Eddleman and Conway (1998) as a mosaic of emergent plant stands of different ages, interspersed with shallow pools of open water.

Threats. Threats to Yuma clapper rails include predation; degradation of habitat; selenium contamination of prey base; abnormally low or high water levels, which can cause nest and/or territory abandonment; as well as river management activities (e.g., channelization, dredging/filling activities, bank stabilization, and other flood control activities), which can adversely affect marsh habitats (LCR MSCP 2016).

Presence within the Action Area. Yuma clapper rails could occur within or near the action area at the crossing of the Colorado River and in drains and canals among cultivated fields to the west of that river.

Historically, prior to channelization, there was likely more suitable habitat in the area. Currently, there is no suitable marsh nesting or foraging habitat within or near the location where the TWL transmission line will cross the Colorado River. The river at that location is channelized, and has a thin stand of shrubs and short trees on the steep river banks (**Figures 8 and 9**). The floodplain on the eastern side of the Colorado River has no standing water and no marsh habitat. A road and cultivated fields are immediately west of the river at the crossing. The nearest site with a nesting population of Yuma clapper rails is Cibola NWR, about 15 miles south of the TWL river crossing.

There is a backwater channel about 0.4 miles south of the river crossing that contains small patches of marsh habitat (**Figure 2**). That channel, labeled A10, was created as mitigation for loss of stream channels. Most of the length of the backwater channel has relatively steep banks and little or no marsh vegetation, but there are some small patches of cattail (*Typha latifolia*) and other marsh vegetation along the channel that might be used by Yuma clapper rails (**Figure 10**).

West of the Colorado River, the transmission line route crosses numerous canals that deliver and drain water to and from irrigated fields in Palo Verde Valley. Most of the canals are lined with concrete or are cleared of vegetation (**Figure 11**). Eight of the drains, however, have about 50- to 150-foot-wide stands of vegetation along the banks of the drain, including some with narrow bands of cattail and other marsh vegetation along the bottom of the drain. Yuma clapper rails have been observed using irrigation canals and drains in the agricultural fields south and southwest of Blythe (R. Kim, CDFW, personal communication July 27, 2016). **Figure 11** shows the largest drain crossed by the TWL transmission line route.



Figure 10. Potential Yuma clapper rail habitat in a backwater channel 0.6 miles south of the TWL transmission line crossing of the Colorado River.



Figure 11. Irrigation canal (top) and irrigation drain with vegetation along TWL transmission line route in Palo Verde Valley.

Yuma clapper rails have been thought to be primarily sedentary. However, recent monitoring has documented that some radiomarked individuals disperse or migrate from marsh habitat along the lower Colorado River to areas along or near the Gulf of California in northern Mexico (Harrity and Conway 2018). Some monitored rails were located in agricultural fields, desert uplands, and other atypical habitat, and Yuma clapper rails have been found at least once at a solar energy facility in an upland region of southern California (Harrity and Conway 2018). It is therefore likely that some Yuma clapper rails travel through the area where the TWP transmission line route crosses the Colorado River, and that they could be found in agricultural areas or other upland areas in that region.

3.5 Razorback Sucker

Legal Status. The razorback sucker was federally listed as endangered in 1991 (56 FR 54957). Critical habitat was subsequently designated in 1994 (59 FR 13379), including the Colorado River and portions of the 100-year floodplain from Parker Dam to Imperial Dam that contain constituent elements (listed below). The TWL transmission line will cross that designated habitat about 4.7 miles south of I-10 (**Figure 2**).

Distribution and Abundance. Endemic to the Colorado River Basin, the razorback sucker is found in backwaters, flooded bottomlands, pools, side channels and other slower moving water. Historically, the razorback sucker was found in areas near strong currents, and occurred in all major rivers and larger streams in the Colorado River basin and was once the most widespread and abundant of the basin's big-river fishes. In the upper basin of the Colorado River, small remnant populations are found in the Green, Yampa, and mainstream Colorado Rivers. They also are found in the San Juan River near the New Mexico-Utah border.

In the lower Colorado River basin, there are small wild populations of razorback suckers in Lake Mead and Lake Mohave. This species also occurs in numerous backwater channels throughout portions of the lower Colorado River where they have been stocked since 2005 (USBR 2015, McCall et al. 2017). Current plans are to release 6,000 razorback suckers per year into Reach 4 of the river (Bill William River to Cibola NWR), including releases into sites near the action area.

Habitat. Razorback suckers historically inhabited virtually all components of riverine habitat; in particular, low-velocity habitats such as backwaters, sloughs, oxbow lakes, and other slackwater habitats within the main river channel were important (LCR MSCP 2016). Habitat selection by adult razorback suckers changes seasonally. For example, Tyus and Karp (1989) document the use of flooded areas as habitat during spring. In addition, radio telemetry monitoring by Tyus (1987) identified adult fish using near-shore runs during spring, and shifting to shallow waters associated with submerged midchannel sandbars during summer, with little use of backwaters.

Some populations of razorback suckers in the lower Colorado River basin use lentic environments created by various impoundments. Lentic-dwelling razorback suckers have been documented using a wide variety of habitats, including vegetated areas, pelagic and littoral shoreline habitats, and substrates ranging from silt and sand to gravel and cobble (Albrecht et al. 2008). Adult razorback suckers have been documented via sonic surveillance to typically occupy depths less than 30 m (averaging between 3.1 and 16.8 m) and are generally located within 50 m from the shore during the winter months (less than 30 m from shore during peak spawning activity) (LCR MSCP 2016).

Primary constituent elements of critical habitat for the razorback sucker include water; physical habitat for use in spawning, nursery, feeding, and rearing, or corridors between these areas; and biological environment. Physical habitat includes, in addition to river channels, "bottom lands, side channels, secondary channels, oxbows, backwaters, and other areas in the 100-year flood plain, which when inundated provide spawning, nursery, feeding and rearing habitat, or access to these habitats" (59 FR 13378).

Threats. Alteration of river conditions and loss of habitat caused by dam construction, irrigation dewatering and channelization; and introduction of exotic fish species, such as black bullhead, carp, and channel catfish. Recent population declines and disappearances of razorback suckers from much of their former range have been associated with the widespread onset of anthropogenic changes to the natural environment.

Presence within the Action Area. Razorback suckers have been and continue to be released into the A10 backwater located in Arizona, 0.4 to 1.9 miles south of where the TWL transmission line will cross the Colorado River (USBR 2015) (**Figure 2**). They also are stocked in backwater CA7 (McIntyre Park) in California, 0.8 to 1.7 miles south of the crossing, and in the mainstem of the river. For example, between December 2014 and May 2017, 3,022 and 3,520 razorback suckers were stocked into the upper and lower sections of A10, respectively, and 1,274 were stocked into CA7 (McCall et al. 2017).

The movements of stocked razorback suckers in A10, CA7, and other backwaters are being monitored using passive integrated transponders and radio telemetry. As of 2017, most razorback suckers stocked into those backwater channels remained there, although a small number left and traveled to other backwaters or into the mainstream of the Colorado River. Mortality of stocked fish appears to be very high within the backwaters (McCall et al. 2017).

Where the TWL transmission line will cross the Colorado River there is no surface water connection between the mainstream and the floodplain on the eastern side of the Colorado River; thus, that floodplain is not habitat for razorback suckers and does not contain any of the primary constituent elements of critical habitat defined for this species (59 FR 13378).

3.6 Bonytail Chub

Legal Status. The bonytail chub (*Gila elegans*) was listed as endangered throughout its range in 1980 (45 FR 27710). Critical habitat was subsequently designated in 1994 (59 FR 13374), including portions of the Colorado, Green, and Yampa rivers in the upper Colorado River basin, and portions of the lower Colorado River north of Parker Dam. The TWL transmission line does not cross designated habitat for this species.

Distribution and Abundance. Historically, bonytail were widespread and common throughout the mainstream and large tributaries of the Colorado River, with captures documented from Mexico to Wyoming. Populations began decreasing in the 1950s with the development of mainstream dams and this species was rare or extirpated from much of its range by the 1980s or earlier (USFWS 2002b). It is now functionally extirpated from its historic range and is found only in areas where stocked (USBR 2015, LCR MSCP 2016). Stocking in the lower Colorado River has been conducted downstream of Davis Dam since 2006 (USBR 2015).

Habitat. Little is known about the specific habitat requirements of this species since very few wild bonytail were captured prior to extirpation from the lower Colorado River. However, limited data from early fisheries surveys indicate the species tended to be found in free flowing rivers near eddies adjacent to swift currents; higher-gradient, gravelly riverine sections; and areas of high flow with rocky habitat. Additional data suggests adult bonytail utilized fast, “flowing” water, as well as eddies and pools from 1 to 3 meters deep. Spawning probably spawn over rocky substrates, and flooded bottomlands might be important as nursery habitat for young (45 FR 27710, USFWS 2002b, LCR MSCP 2016).

Threats. Construction of mainstem dams and the subsequent replacement of diverse, free-flowing and warm riverine environments with reservoirs and cool outflows below dams has been identified as the major factor contributing to the decline of bonytail and other large-river fishes (LCR MSCP 2016). In addition, blockage of migration routes by dams and reservoirs and predation by and competition from successfully established nonnative fishes in the Colorado River and its reservoirs also have contributed to the decline of the species (USFWS 2012, LCR MSCP 2016).

Presence within the Action Area. Bonytail have been and continue to be released into the A10 backwater (**Figure 2**), other backwater channels, and the mainstem of the river near where the TWL transmission line will cross the Colorado River (USBR 2015). Between December 2014 and March 2017, 5,480 bonytail were released into backwater channel A10 and 2,745 were stocked into CA7 (McCall et al. 2017).

The movements of stocked bonytail in A10, CA7, and other backwaters are being monitored using passive integrated transponders and radio telemetry. The re-contact rate of released bonytail was very low, and very few were located outside of the channel into which they were released. One bonytail was documented crossing the Colorado River from channel A10 to channel CA7, downstream of where the TWL transmission line will cross the Colorado River. Mortality of stocked fish appears to be very high within the backwaters (McCall et al. 2017). There is no designated critical habitat within the action area. The nearest designated critical habitat is located approximately 42 miles north of the nearest point within the action area, but approximately 60 river miles north of the planned TWL crossing of the Colorado River.

4. Effects of the Action

This section evaluates the direct and indirect effects of constructing and operating the TWL transmission line on seven threatened or endangered species and proposed and designated critical habitat for three of those species. Indirect effects are those that are caused by or will result from the proposed action and are later in time, but are still reasonably certain to occur. Because this BA evaluates the effects of operating the TWL transmission line for up to 50 years, most or all effects discussed below are direct (or immediate) effects that will occur during the implementation of the project.

Action agencies are required to evaluate the direct and indirect effects of an action on listed species and critical habitat, together with the effects of other activities that are interrelated or interdependent with the action. Interrelated actions are those that are part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no independent utility apart from the proposed action. The TWL transmission line is a stand-alone and complete power delivery project that is not dependent upon or related to other actions or projects and does not have any projects that are solely dependent upon completion of the transmission line. For example, there are no power generation facilities or power use projects that are depending solely on the TWL transmission line and that will not be developed if not for this transmission project. In addition, there are no ancillary facilities or infrastructure, such as substations or other transmission or distribution lines, other than those addressed in Section 2, which are interdependent upon or interrelated to the TWL project. Thus, the effects of interrelated or interdependent actions are not further discussed in this section.

Action agencies also must consider the cumulative effects of their proposed action. Cumulative effects include the effects of future State, tribal, local, or private actions that are reasonably certain to occur in the action area considered in this Biological Assessment. The TWL transmission line is being developed primarily on federal lands and any future actions implemented in part or in total on those lands will require separate consultation under Section 7 of the ESA and are not considered in an analysis of cumulative impacts. The transmission line also will cross Arizona State Trust lands and private property in California. State Trust lands in Arizona are managed by regulations that mandate the use and management of those lands for generation of revenue to fund education in Arizona, and as such the use of those lands is not anticipated to change substantially in the future. Similarly, most private property within or near Palo Verde Valley in California has been fully developed for agricultural production or solar energy generation, and there are no indications that those uses will change. Therefore, the current and likely future effects of state and private actions on threatened and endangered species is reflected in current, baseline conditions and is not further considered in any evaluation of cumulative effects.

4.1 Sonoran Pronghorn

As further described in Section 2.2, preconstruction and construction along each section of the transmission line will occur as a series of activities, each lasting from a few hours to one or more weeks. Most construction work, starting with road construction and other ground-clearing activities and ending with wire stringing, will occur over a period of a few weeks to a few months along each section of the line. During that work, crews will vary from small groups of one to a few trucks (e.g., during preconstruction staking and surveying) to large crews with numerous cranes, boom trucks, and other large equipment (**Table 2**). A helicopter will be used for at least one day along each section during wire stringing, and might also be used infrequently during other construction activities.

During the 50-year operations and maintenance phase of the project, the transmission line will be patrolled, and inspected annually by crews of one or a small number of trucks driving along the transmission line route, and also about annually by helicopter or airplane. Road maintenance will occur as needed to support those patrols and inspections. Maintenance and repairs of structures, conductors, and other project infrastructure will be performed as needed, generally using the same number and types of equipment used during construction (**Table 2**).

Project decommissioning also will require the same types of equipment and crews and needed for construction, with large crews using heavy equipment being present along each section of the transmission line for a few weeks to a few months.

Any pronghorn in La Posa Plain during construction, operation, and decommissioning of the transmission line could be directly affected by the presence of workers and their equipment and associated noise generated during those activities. Information provided by the Arizona Game and Fish Department (**Figure 6**) show that monitored Sonoran pronghorn have been located infrequently near the northwestern corner of Kofa NWR and to the north and west of that portion of the refuge. They have, however, been documented in the northern portion of Kofa NWR and adjacent BLM land, including along both the eastern and western ends of the pipeline road and 500 kV transmission line that bisect the northern part of the refuge (Erin Fernandez, USFWS, personnel communication, February 11, 2019). They also have not been found along or near the transmission line route near I-10. Pronghorn and other ungulates in southwestern Arizona move distances of 10 miles or more at times to find water, forage, mates, and other resources (Witham and Smith 1979, Rautenstrauch and Krausman 1989, Hervert et al. 2005), and it is therefore possible that Sonoran pronghorn will move into or through the middle and northern parts of La Posa Plain during the construction period of this project. If the population of Sonoran pronghorn on Kofa NWR continues to grow, it also is likely that they will be more common on the northern part of the refuge and adjacent lands to the north and west during the operations phase of the project.

Studies have documented that Sonoran pronghorn can be sensitive to human activities. For example, Hughes and Smith (1990, as reported in USFWS 2017) observed that Sonoran pronghorn often responded to vehicles by running more than 1,000 feet. Krausman et al. (2004) documented that ground and aerial-based military activities caused changes in behavior of Sonoran pronghorn. Ground-based activities or stimuli resulted in a change in behavior in about 40% of observations, with less than 3% of ground events causing trotting or running. They suggested that these changes were not likely to be detrimental to the adults, but that fawns and their mothers could be more sensitive to human activities than other pronghorn.

BMPs and other mitigation measures to be implemented for this project to reduce impacts to wildlife and their habitat (e.g., weed control, minimization of habitat disturbance, speed limits) are listed in **Appendix A** and are a result of the NEPA process (EIS), and include the following specific measures that may provide additional benefits to Sonoran pronghorn.

Table 5. EIS Best Management Practices and Mitigation Measures that Provide Additional Benefits to Sonoran Pronghorn

APM	BIO-02: Biological Monitoring and Preconstruction Survey	A qualified biological monitor would be present on the Project site during all work activities within habitat of special-status animal species. The qualified biologist would conduct a preconstruction survey of those areas immediately before work activities begin and would locate and fence off any present individuals of special status plant species.
BMP	BIO-02: Biological Monitoring and Preconstruction Survey	Multiple biological monitors would be provided so any work site within habitat of special status species is monitored concurrently if needed.

APM BIO-02 will provide additional assurances that monitors will be present on the Project site during all work activities and while this is not specific to any single species, Sonoran pronghorn certainly fall within the special status animal criteria. BMP BIO-02 also provides assurances that sufficient numbers of monitors will be in place at work sites in special status species habitat including Sonoran pronghorn such that sufficient personnel are available for monitoring requirements and can monitor multiple species, resource issues concurrently. These measures while not specifically developed for Sonoran pronghorn will provide additional benefits to the species due to the commitment to have adequate monitors in place increasing the

chance of identifying and prompt notification should pronghorn occur within 1-mile of project activities on Kofa NWR.

In addition, DCRT and the BLM have agreed upon the following measures to further protect Sonoran pronghorn. These measures will be included in the requirements of the Construction POD for the project and will apply to project construction and maintenance activities when Sonoran pronghorn are present within the action area on Kofa NWR (i.e. northwestern most corner) as depicted in Figure 5.

1. A coordination meeting will be set up with the BLM Field Office, USFWS Kofa NWR, and Arizona Game and Fish Department prior to any construction, scheduled maintenance, or other project activities within 1 mile of Kofa NWR, other than driving on existing roads during inspection activities, to become informed of known Sonoran pronghorn use in the area. If Sonoran pronghorn are known to occur on the action area on Kofa NWR at the time of the proposed construction, scheduled maintenance or other project activities, then no project construction or scheduled maintenance activities will be conducted until pronghorn on Kofa NWR are no longer within 1 mile of project activities.
2. Biological monitors will search for Sonoran pronghorn while accompanying construction crews and crews doing scheduled maintenance and repair work in southern La Posa Plain. If a biological monitor observes Sonoran pronghorn within the action area on Kofa NWR, all work within 1 mile of those animals will stop as soon as safely possible and will not restart until the pronghorn move away from the activities. If pronghorn are detected during project activities, DCRT will notify FWS Arizona Ecological Services Office and Kofa NWR as soon as possible, but within 48 hours.
3. No construction or scheduled maintenance activities within 1 mile of Kofa NWR, other than driving on existing roads during scheduled inspections, will occur during the fawning season of February 1 to July 15 when pronghorn are present within the action area on Kofa NWR.
4. DCRT will schedule an annual coordination meeting with the BLM Field Office, USFWS Kofa NWR, and Arizona Game and Fish Department prior to construction and scheduled maintenance activities. The annual coordination meeting will provide information on activities for that year that need to be completed and will provide the agencies with an opportunity to present any new information on Sonoran pronghorn use along or near the TWL transmission line.
5. DCRT will prepare an annual report and provide it to the BLM, USFWS Kofa NWR, and Arizona Game and Fish Department. That report will include information on construction and scheduled maintenance activities that occurred within 1 mile of the Kofa NWR, timing of those activities, documentation of coordination with the agencies, identification of any BMPs that were implemented, and documentation of observations and monitoring efforts during activities.

By implementing these measures, risks to fawn and females on Kofa NWR during the fawning season will be minimized or avoided, and flight behavior and associated stress of any Sonoran pronghorn located near construction sites will be reduced. However, even with implementation of these measures, the potential remains that the project could affect Sonoran pronghorn in the following ways.

Unscheduled maintenance and repair work that must occur during the fawning season could cause fawns and their mothers to be exposed to that work. Over the 50-year period of operations it is possible that a small number of pronghorn will be exposed to unscheduled maintenance activities along the transmission line during the fawning season, especially if the population expands outside of Kofa NWR. However, because of the infrequent occurrence of unscheduled maintenance and the very small area on Kofa NWR where pronghorn could be affected, such an impact to pronghorn on Kofa NWR is discountable. To reduce effects during operation of the transmission line, inspections, maintenance, and repair work will occur outside of the fawning season when possible.

Any pronghorn that are near the transmission line during construction, operations, or decommissioning activities likely will temporarily modify their behavior and move away from those activities. This could cause a temporary increase in stress or other physiological effects to those individuals. This will also result in a temporary loss or avoidance of habitat along the transmission line and surrounding the activity. That temporary loss of available habitat will be insignificant because there are large expanses of surrounding and similar habitat for those pronghorn to move into and because work will occur in any area for only a short period. In addition, there are no water sources or other unique habitat features along or near the route. Thus, project activities will only temporarily prohibit use of habitat surrounding the transmission line and will not prohibit the use of high value habitat.

It is unlikely that the transmission line will be an important additional barrier to movements of pronghorn or to the expansion of the population of Sonoran pronghorn on or off of Kofa NWR. The transmission line and associated long-term access road will be located in an area of La Posa Plain that already has similar linear features, such as Highway 95, a relatively well developed off-highway road network, and an adjacent transmission line. Operational activities, such as inspections and repairs, will occur infrequently and will cause any pronghorn in the area to only temporarily modify their movements and behavior.

It also is unlikely that the transmission line access road will create an opportunity for additional off-road vehicle activity and associated increase in human activity within most potential habitat for Sonoran pronghorn in La Posa Plain. That area already has substantial off-road recreational activity, centered near and south of Quartzite. The area also has a well-developed set of roads and trails, including roads parallel to and near the TWL transmission line route, and a pipeline road and transmission line road near the northwestern corner of Kofa NWR.

Determination of Effects – Based on the requirements summarized in Section 3.1 for evaluating effects to nonessential experimental populations, the BLM must consider the nonessential experimental population of Sonoran pronghorn on Kofa NWR in the same manner as a threatened species and determine whether the project is likely to adversely affect that population. The BLM also must consider the nonessential experimental population of Sonoran pronghorn off of the refuge in the same manner as a proposed species and determine whether the project is likely to jeopardize the continued existence of that population.

The BLM has determined that construction, operation, and decommissioning of the TWL transmission line may affect but is not likely to adversely affect the nonessential experimental population of Sonoran pronghorn on Kofa NWR for the following reasons.

- The transmission line will not be located on Kofa NWR and only about 1,125 acres of the refuge are within the action area (**Figure 5**) and additional measures are being applied to reduce visual and auditory impacts to Sonoran pronghorn on Kofa NWR.
- Construction and scheduled inspections and maintenance will not be conducted within 1 mile of the refuge during the fawning season to avoid affecting any fawns and their mothers.
- An annual coordination meeting with DCRT, state and federal agencies will provide an opportunity to review existing best available data regarding Sonoran pronghorn use near the Kofa NWR and will allow for the assessment of triggers (i.e. increase in Sonoran pronghorn use in the area, increased interactions between project activities and the species) that may result in the need to reinitiate consultation.
- Biological monitors will be present during construction activities and if Sonoran pronghorn on Kofa NWR come within 1 mile of work activities all work will stop until those animals move away from the activities and FWS will be notified as soon as possible but within 48 hours. Annual coordination with state and federal agencies will allow for the identification of new information on Sonoran pronghorn use within 1 mile of the Project, which will ensure best available data on pronghorn use is being used to inform project activities.

- In the unlikely event that a Sonoran pronghorn on Kofa NWR may be exposed to construction, operations, or decommissioning activities, those effects will be insignificant because they will be short-term, will occur outside of the fawning season (February 1 to July 15). Any temporarily displaced animals will have access to similar habitat in the surrounding area.
- The project will not result in an important additional barrier to movements or an increase in opportunities for off-highway travel on the refuge since the centerline of the project is located approximately 605 feet at its' closest point to the northwest corner of the Kofa NWR.

For many of the reasons stated above, **the BLM also concludes that construction, operation, and decommissioning of the TWL transmission line will not jeopardize the nonessential experimental population of the Sonoran pronghorn off of Kofa NWR.** In addition, because the nonessential experimental population is, by definition, not essential to the continued existence of the species, the effects of a proposed actions on the nonessential experimental population will generally not rise to the level of jeopardizing the continued existence of such a classified species.

4.2 Avian Species

The project could have the potential to effect western yellow-billed cuckoos, southwestern willow flycatchers, and Yuma clapper rails by (1) displacement or other modification of behavior (2), loss or degradation of foraging or migration stopover habitat, or (3) injury or mortality from in-flight collision and/or electrocution.

Displacement. There is no nesting habitat for yellow-billed cuckoo or southwestern willow flycatchers within or near the ROW (**Sections 3.2 and 3.3**); therefore, the project will not displace nesting birds or otherwise affect nesting by these species. Individual cuckoos and flycatchers migrating, foraging, or otherwise within or near the floodplain where the transmission line crosses the Colorado River could be temporarily displaced from that area during construction and maintenance. This will have an insignificant effect on those individuals because the floodplain is, at best, marginal foraging habitat for those species; there are areas of similar or better habitat throughout that section of the river into which those individuals could move; and construction and maintenance activities will be temporary, with each phase of construction and each maintenance activity usually lasting from a few hours to a few days at any site.

The TWL transmission line will cross eight vegetated irrigation drainage canals in the Palo Verde Valley, some of which have narrow bands of emergent vegetation along the bottom of the canal that could be used by non-nesting Yuma clapper rails (**Figure 11**). In addition, there are small patches of emergent vegetation and marsh habitat along the banks of the A10 backwater, 0.4 to 1.9 miles south of the river crossing (**Figure 9**). Because of the small size and patchy distribution of those marsh areas, it is unlikely that they are used for nesting by Yuma clapper rails. Any rails foraging in or otherwise using a drain near construction or maintenance activities could be temporarily displaced, and there are many miles of similar irrigation drains in southern Palo Verde Valley into which they could move. It is less likely that rails will be displaced from the A10 backwater because project access to the area will be from the north and construction or maintenance activities will be no closer than 0.4 miles of the drain. However, any rails disturbed there during construction or maintenance could temporarily move south within that drain or to similar habitat in other nearby backwater channels.

Loss or Degradation of Habitat, including Critical Habitat. Construction of three transmission towers within the Colorado River floodplain in Arizona will require temporary disturbance of about 5 acres to develop temporary work areas (each about 200 x 200 feet) and one 50-foot spur access road (**Figure 8**), and possibly to widen or otherwise improve the existing access road along the Devers-Palo Verde transmission line. As described in **Sections 3.2 through 3.4**, that floodplain does not have nesting habitat for yellow-billed cuckoo, southwestern willow flycatchers, or Yuma clapper rail. Individuals of those species pass through the region during spring and fall migrations and possibly at other times, and the project will cause a long-term loss of marginal foraging habitat that might be used by those individuals.

Where the TWL transmission line will cross the Colorado River, the floodplain in Arizona has been proposed for designation as critical habitat for the yellow-billed cuckoo (79 FR 48576). That floodplain is vegetated with sparse to moderately dense stands of tamarisk and saltbush and other low shrubs. There are individual and small groups of honey mesquite along the eastern edge of the floodplain, but no overstory of cottonwoods or other native riparian tree species. The floodplain at that location has no surface water connection to the Colorado River, except possibly during extremely high flows, there is no standing water in that floodplain, and the only water channels are ephemeral streams that carry water from the foothills to the east. Thus, temporarily disturbing up to about 5 acres within that floodplain to construct the TWL transmission line will not cause the loss of or otherwise adversely affect any of the primary constituent elements of critical habitat for this species (riparian woodlands, adequate prey, dynamic riverine processes). However, placement of three transmission towers within that floodplain will result in the long term loss of less than two acres of land. Although that land currently is not suitable nesting habitat, it could be improved in the future as yellow-billed cuckoo nesting habitat. There also is no suitable nesting habitat elsewhere within the action area.

Mortality from Electrocution or Collisions. Transmission lines are known to be an important source of avian mortality (Manville 2005, Rioux et al. 2013, Bernardino et al. 2018). Loss et al. (2014) estimated that between 8 and 57 million birds are killed annually in the United States by collisions with transmission lines and 0.9 to 11.6 are killed annually by electrocution. This is about one to two orders of magnitude less than estimates of annual mortality by cats, buildings, and vehicles, but greater than estimated rates of mortality caused by communication towers, wind turbines, and other sources of anthropogenic mortality (Loss et al. 2015).

Similar to other transmission lines in the region, the TWL transmission line will result in the mortality of birds. Mortalities likely will be highest along and near the Colorado River, which is valued as a migration corridor and where birds are in greater abundance in and near agricultural fields in California, and possibly where the transmission line will cross the Central Arizona Canal and other canals in Arizona since these habitats are less common throughout the Project Area and are likely to have higher densities of riparian birds during spring and fall migrations as compared to the Mojave desert scrub habitats.

Numerous factors have been suggested to influence the risk of avian mortality at transmission lines, including species-specific characteristics; orientation, height, span width and other design characteristics of transmission lines, and habitat through which transmission line passes (Bernardino et al. 2018). For example, transmission lines that are perpendicular to migration or movement corridors such as large rivers, valleys, or coastlines, likely are a greater risk to birds than those parallel to those movement corridors. Birds with large wing spans and that perch on man-made structures, such as hawks and eagles, are more vulnerable to electrocution. Because the listed species that could be affected by the TWL transmission line are small, and the clearance and spacing between conductors on 500 kV transmission lines is relatively large, the risk of any of the three listed species being electrocuted is discountable (EMD 2019).

There is little site-specific data available to evaluate the rate of mortality of birds caused by transmission lines. The USFWS provided a list of threatened and endangered birds that have been found dead at renewable energy facilities and transmission lines in southern California (R. Bransfield, personal communications, October 9, 2018). This includes two yellow-billed cuckoos and two clapper rails found dead at solar generation facilities and 8 willow flycatchers (2 subspecies *brewsteri* and 6 subspecies not specified) that appeared to have collided with transmission lines. USFWS staff also provided a database of wildlife mortalities documented along the Devers-Palo Verde 2 transmission line from February 2, 2012 to May 10, 2013 (P. Sanzenbacher, personal communications, October 9, 2018). Two-hundred and twenty-eight carcasses of birds were documented from 72 species. Of 93 observations where cause of death could be determined, 6 were attributed to electrocution. At least one willow flycatcher (subspecies unknown) and one Virginia rail (USFWS email coordination on June 10, 2019) were found under the transmission line. The willow flycatcher carcass was found during construction (prior to wire stringing) and cause of death could not be determined. The cause of death of the rail was listed as collision with the transmission line.

Collision with transmission lines is also known to be a cause of mortality, especially for migrating birds. For example, birds with a high wing load (i.e., ratio of weight to wing area) or otherwise are not agile fliers could

be more vulnerable to collisions. This likely includes members of the family Gruiformes, including rails. During the previously mentioned Devers-Palo Verde mortality study, of the 93 wildlife deaths where cause of death could be determined, 68 were attributed to collisions with lines.

As reviewed by EDM International (2019, **Appendix C** of this BA), there are a number of products available that are used to make transmission and distribution line wires more visible and reduce avian collisions. These products include balls, spiral vibration dampers, and other structures that are attached to conductors and other wires and stationary or moving placards, wheels, or other items that hang from wires. Methods for lighting sections of transmission lines with UV light to reduce nocturnal collisions have also been developed and are being tested (Dwyer et al. 2019, in EDM 2019). Research has shown that marking of lines, particularly the static wire, can reduce avian collisions. For example, as reported in EDM International (2019), Firefly bird flight diverters reduced avian collisions on distribution lines by 60% at Staten Island, California and 33 to 50% in Nebraska. In addition to considerations of the size, location, color, and design of markers, ease and safety of attachment, durability, and maintenance must be considered when selecting the type of line marker to use to reduce avian collisions.

As described in the following subsection, EDM International Inc., a company with substantial experience developing and evaluating the collision risk of transmission lines, has recommended that FireFly High Wind line markers be installed where the TWL transmission line crosses the Colorado River, agricultural fields, and the Central Arizona Canal. These bird diverters are impact resistant and UV-stabilized acrylic “flappers” that are 3.5 x 6 inches and rated for temperatures from -30 to 160 degrees F. They are recommended for the TWL transmission line the following reasons (EDM International 2019, and material provided by the manufacturer of this product at <https://pr-tech.com/product/firefly-hw-bird-diverter/>):

- Made from impact-resistant and UV stabilized acrylic and are designed for durability in sustained winds.
- Has a luminescent plate that emits visible light for up to 12 hours after dusk and in low light and fog conditions.
- Refracts sunlight and create a “sparkle effect” visible to birds up to 0.25 miles.
- Can be safely installed to and removed from energized wires.
- Are relatively durable, as evidenced by 100% of similar Firefly line markers lasting for at least 64 months in a study in North Dakota (Sporer et al. 2013).

Impact Minimization Measures. BMPs and other mitigation measures that have been developed as part of the Project’s NEPA process and that are to be implemented for this project to reduce impacts to wildlife and their habitat (e.g., weed control, minimization of habitat disturbance, speed limits) are listed in **Appendix A**, and include the following EIS specific measures that would provide some benefit to the three listed bird species.

Table 6. Summary of EIS Best Management Practices and Mitigation Measures that Provide Additional Benefits to Listed Avian Species

Design Feature/Mitigation Measure	Description	Description of Design Features or Mitigation Measures resulting from the NEPA process and how they may provide additional benefits to ESA-listed species
BIO-19: Colorado River	<p>In the vicinity of the Colorado River, existing structure spacing and conductor heights would be matched to the greatest extent practical to reduce the potential for bird collisions with the power line. The transmission line would span the Colorado River and the minimum number of structures possible would be located within the undeveloped floodplain.</p> <p>The term, "vicinity of the Colorado River" is defined to mean the river crossing, floodplain, and associated agricultural lands. In these areas, conductor bundles would be in a horizontal, parallel configuration, and match existing structure spacing and conductor heights to the greatest extent practical to reduce the potential for bird collisions with the power line. No guyed structures would be used at these locations.</p>	Design considerations appropriate to ESA-listed avian species discussions include matching structure type and general conductor height of the existing transmission line where Ten West Link parallels that line at the Colorado River crossing. This includes ensuring height of structures meets minimum clearances for sag to ground and sag to vegetation and safety being the number one consideration. Matching structure type and conductor height will keep the Ten West Link project in the same general plane as the existing transmission line. This may increase the chances that avian species that are familiar with the existing transmission line as an obstacles on the landscape and may provide opportunity for reducing avian collisions with the Ten West Link project.
BIO-20: Migratory Bird Nesting Season During Construction	If construction is scheduled during the nesting bird season (generally February 1 through August 31), the work area would be surveyed for birds protected under the Migratory Bird Treaty Act and applicable Arizona and California codes, as appropriate. Active nests identified during preconstruction surveys would require protective buffers or visual barriers to ensure compliance with those regulations. If the qualified biologist determines that construction activities would cause distress to nearby nesting birds, larger buffers or construction delays might be necessary to allow the birds to successfully fledge from the nest.	This measure is specific to minimizing impacts during the migratory bird nesting season. While this measure would also provide benefits to ESA listed species; the area of the Colorado River where the Ten West project crosses is not suitable nesting habitat; however, this measure will provide opportunities for detecting nesting activities including ESA-listed birds should they occur. Recognizing that if nesting is identified within the Project Area that reinitiation of consultation will occur.
BIO-21: Reduction of Avian Collision	Current guidelines and methodologies appropriate to infrastructure size (APLIC 2006, 2012) would be used in the design of the proposed transmission and SCS distribution facilities to minimize the potential for raptors and other birds to collide with the lines during operations and be electrocuted. For example, aerial marker balls or other visibility markers would be placed at and near the crossing of the Colorado River to increase the visibility of the transmission line to birds using that movement corridor. Further, placement of lines significantly above existing transmission lines, topographic features, or tree lines would be avoided. These measures would be	Design considerations appropriate to ESA-listed avian species discussions include matching structure type and general conductor height of the existing transmission line where Ten West Link parallels that line at the Colorado River crossing. This includes ensuring height of structures meets minimum clearances for sag to ground and sag to vegetation and safety being the number one consideration. Matching structure type and conductor height will keep the Ten West Link project in the same general plane as the existing transmission

	implemented, where practicable, in conjunction with an Avian Protection Plan for the Project (APP).	<p>line. This may increase the chances that avian species that are familiar with the existing transmission line as an obstacles on the landscape and may provide opportunity for reducing avian collisions with the Ten West Link project.</p> <p>The EDM recommendations (Appendix C) for line markers provides more detail and site specific placement, type of markers, etc. than what the APP currently provides. All measures resulting from the Section 7 consultation process will be carried forward to applicable plans being developed in coordination with state and federal agencies as part of the NEPA review process.</p>
BIO-21: Reduction of Avian Collision and Electrocution	Aerial visibility markers would be placed on overhead ground wires (not conductors) at crossing of the Colorado River and floodplain to increase visibility to birds using that movement corridor and marking any other static wires to improve visibility and reduce collisions. Deterrents would be added to reduce nesting and perching by ravens and other predatory birds. The Avian Protection Plan would include requirements for monitoring the effectiveness of anti-electrocution design.	This measure as it relates to ESA-listed species has been more definitively developed through the Section 7 consultation process. These measures resulting from Section 7 will be carried forward into applicable plans being developed in coordination with state and federal agencies as part of the NEPA review process.
BIO-29: Bird and Bat Conservation Strategy	The Bird and Bat Conservation Strategy would provide guidance on conservation measures applicable to bird and bat species present in the Project Area, including a nesting bird management plan and a nest management plan.	Same as previous, the Bird and Bat Conservation Strategy will bring forward applicable measures and considerations resulting from the Section 7 consultation process which is being developed in coordination with state and federal agencies as part of the NEPA review process.
BIO-39: Bird- and Bat-Friendly Fencing	When fencing is necessary, use bird and bat compatible design standards.	In areas where ESA-listed species occur, there is no fencing that would be needed.
BIO-48: Flight Diverters	Bird flight diverters would be installed on the Colorado River and associated floodplain crossings and other areas of high bird use as recommended by BLM in consultation with USFWS, AGFD, and CDFW.	This measure as it relates to ESA-listed species has been more definitively developed through the Section 7 consultation process. These measures resulting from Section 7 will be carried forward into applicable plans (APP/BBCS) being developed in coordination with state and federal agencies as part of the NEPA review process. The EDM Report (Appendix C) provides specificity and detailed discussion on the variety of markers available, the benefits of the markers, and a project specific recommendation to the Ten West Link Project in consideration of the ESA-listed species associated with the project. Refining the type of line markers

		that will be used through the Section 7 consultation process has allowed for thorough coordination, and a more focused discussion leading to the identification of specific areas where ESA-listed species are known or may occur given the landscapes and importance of habitats in the lower Colorado River valley and greater occurrence potential/known detections of ESA-listed avian species in the area. The FireFly HW was recommended by EDM for a variety of qualities including ease of maintenance and replacement with an unmanned aircraft and the glowing and UV light abilities of the marker to increase visibility to birds, especially nocturnal migrants.
MM WIL-CEQA-6: Conduct Pre-construction Surveys for Nesting and Breeding Birds	The Applicant shall retain a qualified avian biologist(s) (approved by the CPUC, BLM, and CDFW) to conduct pre-construction nesting bird surveys, within the recognized breeding season (generally 15 Feb – 15 Sep [1 Jan – 15 Aug for raptors]), for all areas within 500 feet of construction activities; construction activities include mobilization, staging, grading, and/or construction. These survey dates may only be modified with the approval of CDFW and USFWS (where applicable). Measures intended to exclude nesting birds shall only be implemented with the prior approval by the CDFW and/or USFWS. (See Appendix A for remainder of requirements).	Similar benefits to BIO-20.
MM WIL-CEQA-1. Develop and Implement an Avian Management and Protection Plan	The Project Applicant shall prepare an Avian Protection Plan (APP) and Bird and Bat Conservation Strategy (BBCS), which will also include a component for a Nesting Bird and Nest Management Plan (NBNMP), as identified in the BBCS in BMP BIO-29, in coordination with and approval by the applicable permitting/resource agencies (i.e., BLM, CDFW, USFWS, CPUC) prior to the start of construction. (See Appendix A for remainder of requirements).	Similar benefits to BIO-21 and BIO-29
MM WIL-CEQA-8: Conduct Protocol Surveys for Arizona Bell's Vireo, Southwestern Willow Flycatcher, and Willow Flycatcher; Avoid Occupied Habitat; Compensate Impacts	If Project related activities are scheduled to occur during the breeding season (generally 15 Feb – 15 Sep) the Applicant shall have a qualified avian biologist, approved by the CPUC, BLM, and CDFW, conduct protocol surveys prior to the start of construction for Arizona Bell's vireo (ABV), southwestern willow flycatcher (SWFL), and willow flycatcher (WFL) in suitable habitat within the Project area and 500 feet of disturbance areas. The surveys shall follow all current agency protocols (i.e., CDFW, USFWS). (See Appendix A for remainder of requirements).	

In addition, the BLM and DCRT have agreed upon the following design features and mitigation measures to further reduce the potential for listed birds to collide with the TWL transmission line along and near the Colorado River.

- To minimize introducing a new obstacle to birds, the TWL transmission line will be constructed to the extent practicable adjacent to the Devers-Palo Verde 500 kV line, towers will be located as close as possible to the existing structures, and all wires will be configured at the same height as the existing line.
 - DCRT arranged for EDM International Inc. to conduct an evaluation of collision risks to birds of the TWL transmission line and identify and recommend state of art measures for reducing that risk. (EDM International 2019, **Appendix C** of this BA) To reduce avian collision risks along the TWL transmission line, EDM International recommend that FireFly HW line makers be installed in the following locations, and DCRT has agreed to implement those recommendations:
 - Across and near the Colorado River and adjacent floodplain in Arizona from structures 343 to 352 (approximately 1.4 miles) (Refer to Section 3. Task 2- Avian Risk and Figure 3-2 of EDM Report Appendix C of this BA).
 - Across agricultural field from structures 352 to 392 in California (approximately 11.0 miles) (Refer to Section 3. Task 2- Avian Risk and Figure 3-2 of EDM Report Appendix C of this BA).
 - At the six locations in Arizona where the transmission line will cross the Central Arizona Project canal. At each location, line markers will be placed on a 100-m section of the line, centered on the crossing (Refer to Figure 3-1 of EDM Report Appendix C of this BA).

The line markers would be spaced about 10 m apart, and staggered on the uppermost static wires. The condition of the markers would be evaluated as part of annual inspections and they would be placed on a maintenance schedule and replaced as necessary (i.e. if damaged or are no longer functioning properly).

- In part to implement mitigation measure MM WIL-CEQA-1, DCRT will develop and implement a plan for monitoring avian mortality in coordination with BLM and USFWS along the project route in areas where listed avian species are most at risk of colliding with the transmission line. That monitoring program will include surveys for dead birds during migration periods in the floodplain of the Colorado River in Arizona and in cultivated fields where permission is granted by landowners to conduct monitoring. The results of that monitoring will be reported to the BLM and USFWS annually and those agencies will evaluate whether the number of documented mortalities of birds, including but not limited to listed birds (i.e. potential to use surrogate species for ESA-listed birds) warrants an alternative method for reducing collisions, indicates an effect of the project not previously considered and need for reinitiation of consultation per 50 CFR 402.16.

Determination of Effects – Similar to decisions reached by action agencies and the USFWS for other transmission lines in the region (for which it was concluded or inferred that there was no or very little risk of collision with transmission lines) (USFWS 2014c, 2015a,b), and for the reasons listed below, **the BLM concludes that construction, operation, and decommissioning of the TWL transmission line may affect but is not likely to adversely affect the western DPS of the western yellow-billed cuckoo, southwestern willow flycatcher, or Yuma clapper rail** for the following reasons.

- There is no nesting habitat at or near the crossing of the Colorado River (**Sections 3.2 to 3.4**) and foraging habitat is absent or marginal. The nearest known nesting for listed bird species is about 10 miles north at Palo Verde Reserve (cuckoos) and 15 miles south at Cibola NWR (cuckoos and rails) from the Project Area; southwestern will flycatchers are not known to nest along the Colorado

River south of the Bill Williams River. To the best of our knowledge and based on literature reviews of existing monitoring reports there is no nesting habitat for any of the federally listed avian species within the action area; however, to provide additional assurances BIO-20 states that construction activities that are scheduled during the nesting season (generally February 1 through August 31) will be surveyed and protective buffers or visual barriers would be applied if nesting birds are found.

- Although the Colorado River is a corridor likely used for foraging and migration, foraging habitat is absent or marginal at best within the action area because of the channelized nature of the river where the TWL project crosses. The lack of frequent flooding or inundation of the floodplain limits the value of this habitat to sustain high value foraging habitat and prey species. Adjacent agricultural fields are actively managed for crop production and it is likely that pesticides including insecticides are applied, which limits the value of these areas to also provide foraging habitat; however, there is little known on the species use of agricultural lands. Migrating flycatchers and cuckoos use a variety of riparian and upland habitats during spring and fall migrations; therefore, it is likely that these species travel through or near the action area to suitable habitats to the north and south. What little information is available on cuckoo migrations indicates that a variety of habitats are used and that broad flight paths are used within the Pacific Flyway with the Colorado River being an important route along the flyway; however, there is too little data to make sound inferences on migration patterns and use within the action area. There is insufficient data to make any inferences of species use specific to foraging and migration outside of those areas being regularly monitored through the LCR MSCP which focuses on breeding and nesting habitat. It is expected that migrating cuckoos and flycatchers are likely to use the area for short-term stop overs for foraging during their migration to more suitable nesting habitat or to winter ranges.
- The conductors and other wires on the TWL transmission line will be configured to match the height of the existing Devers-Palo Verde line and therefore will not create a new obstacle to bird flight. Co-location with the existing line and configuring the TWL project to match that existing line could reduce the collision risk to birds that move along the river, and especially to those individuals that frequent the area and are familiar with the obstacles there.
- DCRT will install FireFly HW line markers as recommended by EDM International (2019, Appendix C) to reduce the risks of listed birds colliding with the transmission line at the Colorado River, in agricultural fields in California, and at six locations where the transmission line will cross the Central Arizona Project canal. These locations are areas where ESA-listed birds are at greater likelihood of occurrence within the Project Area due to the presence of water including riparian, freshwater marshes, and canals as well as agriculture fields where frequent flooding for irrigation purposes occurs as compared to the broad Mojave Desert scrub habitats present on the majority of the line. Those markers are visible during day and night. The line markers would be spaced about 10 m apart, and staggered on the uppermost static wires. The qualities of the FireFly HW line markers such as glowing in the dark and emitting a UV light visible to birds will increase visibility in low light and for night migrants. DCRT will commit to inspecting the line including the line markers during normal inspection activities, which will ensure that line markers not in proper working condition are identified and replaced during scheduled maintenance activities.

Based on the limited number of known mortalities documented for Yuma clapper rail, southwestern willow flycatchers, and western yellow-billed cuckoos at existing transmission and renewable energy projects within the region, it is our assessment that collision effects at a single project would be extremely difficult to detect even with a robust monitoring program, are unlikely to occur or would be considered as a discountable effect because of the low population numbers tied to federally listed avian species in general, the focus of LCR MSCP monitoring at higher quality suitable nesting habitats for the species and the distance from the TWL Project to those higher quality suitable nesting habitat. Monitoring within the habitats where the TWL Project crosses the Colorado River will be difficult due to the intense manipulation that occurs on adjacent private agricultural lands for crop production and where access may be limited because of land ownership; as well as the limited ability to detect mortalities of avian species over a flowing water body. The Avian Protection Plan and Bird and Bat Conservation Strategy as described in BIO-21, BIO-29, and MM WIL-CEQA-1 further defines monitoring for the project that will be further refined in coordination

with USFWS and other federal and state agencies. If monitoring data indicates that impacts to federally listed birds is above what we consider to be un-quantifiably low for an individual project or additional data becomes available through future monitoring efforts, reinitiation will occur.

The BLM also has determined that **construction, operation, and decommissioning of the TWL transmission line may affect but is not likely to adversely modify proposed critical habitat for the western yellow-billed cuckoo**. Construction of the project would result in the temporary disturbance of about 5 acres of proposed critical habitat, and the long-term loss of a smaller amount of that habitat after reclamation has been completed. As described above, the proposed critical habitat within and near the areas to be disturbed is not suitable nesting habitat, is marginal foraging habitat, and does not contain any of the primary constituent elements of critical habitat for this species (riparian woodlands, adequate prey, dynamic riverine processes).

4.3 Fishes

Razorback sucker and bonytail could be adversely affected if construction of the TWL transmission line occurs in the Colorado River or other aquatic habitat used by these species or if construction activities would cause a change in water quality or otherwise degrade their habitat.

The TWL transmission line will span the Colorado River (**Figures 8 and 9**). No structures will be placed in the river and no in-water work will be required to construct or maintain the transmission line.

At the river crossing, the transmission line will be accessed from the north, using existing roads along or near the river bank and associated berm. There will be no need to approach or work near backwater channel A10 (located in Arizona more than 0.4 miles south of the crossing), CA7 (located in California more than 0.8 miles south of the crossing), or other backwater channels along the river between I-10 and the crossing where razorback suckers and bonytail are being released.

BMPs and other mitigation measures to be implemented for this project to reduce impacts to wildlife and their habitat (e.g., weed control, minimization of habitat disturbance, speed limits) are listed in **Appendix A**, and include the following specific measures that would minimize the risk of runoff of sediment and hazardous materials into the Colorado River and other habitat for these listed fish.

Table 7. Summary of EIS Best Management Practices and Mitigation Measures that Provide Additional Benefits to Listed Fish

WQ-01: SWPPP Development and Implementation	<p>Following Project approval, DCRT would prepare and implement a SWPPP or an amendment to an existing SWPPP to minimize construction impacts on surface water and groundwater quality. Implementation of the SWPPP would help stabilize graded areas and reduce erosion and sedimentation. The Plan would designate BMPs that would be adhered to during construction activities. Erosion and sediment control measures, such as straw wattles, covers, and silt fences, would be installed prior to ground disturbance, based on the anticipated volume and intensity of precipitation, the nature of stormwater runoff in the Project Area, and the soil types within the Project Area. Suitable stabilization measures would be used to protect exposed areas during construction activities, as necessary and final stabilization would be completed when construction materials, waste, and temporary erosion and sediment control measure have been removed. During construction activities, measures would be implemented to prevent contaminant discharge from vehicles and equipment, including complying with the Spill Prevention, Control, and Countermeasures requirements in 40 CFR 112. The Project SWPPP would include erosion control and sediment transport BMPs to be used during construction. BMPs, where applicable, would be designed by using specific criteria from recognized BMP design guidance manuals. Erosion-minimizing efforts may include measures such as the following:</p> <ul style="list-style-type: none"> • defining ingress and egress within the Project site, • implementing a dust control program during construction, and • properly containing stockpiled soils. <p>Erosion control measures identified would be installed in an area before construction begins and would be properly maintained until construction is complete and final stabilization begins. Temporary measures such as silt fences or wattles, intended to minimize sediment transport from temporarily disturbed areas, would remain in place until disturbed areas have stabilized.</p>
BIO-08: Refueling	<p>Vehicular and equipment refueling should not occur within 100 feet of a wetland or drainage unless secondary containment is constructed, for example, a berm and lined refueling area. Proper spill prevention and cleanup equipment would be maintained in all refueling areas in accordance with the Spill Prevention, Control, and Countermeasures Plan (SPCC) for the Project.</p>
BIO-50: Engineering Controls	<p>Appropriate engineering controls would be used to minimize impacts on dry wash, dry wash woodland, and chenopod scrub, including downstream occurrences, resulting from surface water runoff, erosion, sedimentation, altered hydrology, accidental spills, or fugitive dust deposition to these habitats. Appropriate buffers and engineering controls would be determined through agency consultation.</p>

WQ-01 will provide measures to minimize impacts on surface and groundwater quality on the Project site during all work activities and while this is not specific to any single species, erosion and sediment controls development of the SWPPP will provide additional benefits to ESA-listed fish within the Colorado River. BIO-08 also provides assurances through the development of the SPCC to reduce potential for accidental fuel spills and ensures containment processes are in place. These measures while not specifically developed for federally listed fish species will provide additional benefits to the species due to the commitment to have adequate plans and controls in place as discussed below.

A Stormwater Pollution Prevention Plan will be prepared and implemented, and controls will be implemented as part of that plan to minimize runoff of sediment from access roads and work areas. That plan would require the installation of erosion control devices to minimize or avoid runoff of sediment from construction sites into nearby waters. Work areas and temporary access roads will be revegetated following construction to minimize erosion and sediment runoff during operation of the line. In addition, a Spill Control Plan will be implemented to minimize the risk of releases of hazardous materials. That plan will prohibit fueling of vehicles or storage of hazardous materials in floodplains or ephemeral stream channels.

Implementation of those measures would reduce, but not eliminate, risk of sediment runoff into the Colorado River during construction of the TWL transmission line. The risk would be temporary, as structure work areas and other sites not required for operation of the transmission line would be reclaimed and soils there would become stabilized over time.

Determination of Effects - Because there will be no in-water work, measures will be implemented to avoid sediment runoff and releases of hazardous materials into the Colorado River, and no work will occur near backwater channels where razorback suckers and bonytail are being released, the **BLM has determined that construction, operation, and decommissioning of the TWL transmission line may affect but is not likely to adversely affect Razorback sucker or bonytail.**

For these same reasons, **the BLM has determined that construction, operation, and decommissioning of the TWL transmission line may affect but is not likely to adversely affect designated critical habitat for the razorback sucker in the Colorado River.** The 100-year floodplain at the location where the transmission line will cross that river does not contain primary constituent elements, and thus is not designated critical habitat for this species (59 FR 13379).

5. Summary of Determinations

The following conclusions regarding effects of constructing and operating the TWL transmission line are based on the description of the project (**Section 2**), status of threatened and endangered species and critical habitat within the action area (**Section 3**), and the analysis of potential effects (**Section 4**).

Construction and operation of the TWL transmission line may affect, but **is not likely to jeopardize the continued existence of the nonessential experimental population of Sonoran pronghorn that occurs outside of Kofa NWR.**

Construction and operation of the TWL transmission line may affect, but **is not likely to adversely affect the following threatened and endangered species:**

- the nonessential experimental population of Sonoran pronghorn that occurs on Kofa NWR
- Western DPS of the yellow-billed cuckoo
- Southwestern willow flycatcher
- Yuma clapper rail (Yuma Ridgway's rail)
- Razorback sucker
- Bonytail

Construction and operation of the transmission line may affect, but **is not likely to adversely modify proposed critical habitat of the western DPS of the yellow-billed cuckoo and is not likely to adversely affect designated critical habitat for the razorback sucker.**

Intentionally Left Blank

6. References

- APLIC (Avian Power Line Interaction Committee). 1994. Mitigating Bird Collisions with Power Lines: The State of the Art in 1994. Washington, D.C. Mitigating Bird Collisions with Power Lines: The State of the Art in 1994. Washington, D.C.
- APLIC 2012. Reducing Avian Collisions with Power Lines: The State of the Art in 2012. Washington, DC.
- AGFD (Arizona Game and Fish Department). 2014. Sonoran Pronghorn Monthly Update. January–December, 2014. Arizona Game and Fish Department Unpublished Reports.
- AGFD. 2015. Sonoran Pronghorn Monthly Update. January–December, 2015. Arizona Game and Fish Department Unpublished Reports.
- AGFD. 2016. Sonoran Pronghorn Monthly Update. January–July, 2016. Arizona Game and Fish Department Unpublished Reports.
- Albrecht, B., R. Kegerries, R. Rogers and P. Holden. 2008. Razorback Sucker Studies on Lake Mead, Nevada and Arizona, 1996–2007. Comprehensive Report to the Bureau of Reclamation, Lower Colorado Region, Boulder City, Nevada, and Southern Nevada Water Authority, Surface Water Resources Department, Las Vegas, Nevada, by BIO-WEST, Inc., Logan, Utah.
- Audubon. <https://www.audubon.org/important-bird-areas/lower-colorado-river-valley>.
- Bernardino, J., K. Bevanger, R. Barrientos, J.F. Dwyer, A.T. Marques, R.C. Martins, J.M. Shaw, J.P. Silva, and F. Moreira. 2018. Bird collisions with power lines: state of the art and priority areas for research. *Biological Conservation* 222:1-13.
- BirdLife International. 2016. Species Factsheet: *Rallus obsoletus*. <http://www.birdlife.org>. July 27, 2016.
- BIO-WEST. 2005. Colorado River Backwaters Enhancement Species Profiles Report. Prepared for U.S. Bureau of Reclamation, Lower Colorado Region, Boulder City, Nevada, October.
- BLM (Bureau of Land Management). 1980. The California Desert Conservation Area Plan of 1980, as amended. BLM, California Desert District, Riverside, California, August.
- BLM. 2002a. Record of Decision for Approved Northern & Eastern Colorado Desert Coordinated Management Plan, an Amendment to the California Desert Conservation Area Plan 1980. BLM, California Desert District Office, December.
- BLM. 2007. Record of Decision and Lake Havasu Field Office Approved Resource Management Plan. BLM, Lake Havasu Field Office, Lake Havasu City, Arizona, May.
- BLM. 2008a. Yuma Field Office Proposed Resource Management Plan and Final Environmental Impact Statement. BLM, Yuma Field Office, Yuma, Arizona, April.
- BLM 2008b. Special Status Species Management. BLM Manual 6840. December, 2008.
- BLM. 2010a. Record of Decision and Approved Resource Management Plan Bradshaw-Harquahala. BLM, Hassayampa Field Office, Phoenix, Arizona, April.

- BLM. 2010b. Yuma Field Office Record of Decision and Approved Resource Management Plan. BLM, Yuma Field Office, Yuma, Arizona, January.
- BLM. 2012. Lower Sonoran Record of Decision & Approved Resource Management Plan. BLM, Lower Sonoran Field Office, Phoenix, Arizona, September.
- BLM. 2016a. Land Use Plan Amendment Desert Renewable Energy Conservation, Land Use Plan Amendment to the California Desert Conservation Plan, Bishop Resource Management Plan, and Bakersfield Resource Management Plan. BLM/CA/PL-2016/03+1793+8321. BLM California State Office, Sacramento, September.
- BLM. 2018. Draft Environmental Impact Statement and Draft Resource Management Plan Amendments for the Ten West Link Transmission Line Project. Colorado River District Office, Phoenix, Arizona, October.
- deVos, J.C., Jr., and W.H. Miller. 2005. Habitat Use and Survival of Sonoran Pronghorn in Years with Above-Average Rainfall. *Wildlife Society Bulletin* 33:35-42.
- Eddleman, W.R. and C.J. Conway. 1998. Clapper rail (*Rallus longirostris yumanensis*) in *The Birds of North America*, No. 340, A. Poole and F. Gill (editors). The Birds of North America, Inc., Philadelphia, Pennsylvania.
- Harry, E. J. and C. Conway. 2018. Wildlife Research Report #2018-1. Dispersal and Migration Behavior of Yuma Ridgway's Rails. 2018 Annual Report.
- Hervet, J.J., J.L. Bright, R.S. Henry, L.A. Piest, and M.T. Brown. 2005. Home-Range and Habitat-Use Patterns of Sonoran Pronghorn in Arizona. *Wildlife Society Bulletin* 33:8-15.
- Johnson, M.J., J.A. Holmes, C. Calvo, I. Samuels, S. Krantz, and M.K. Sogge. 2007. Yellow-billed Cuckoo Distribution, Abundance, and Habitat Use along the Lower Colorado River and Tributaries, 2006 Annual Report. U.S. Geological Survey Open-File Report 2007–1097.
- Johnson, M.J., S.L. Durst, C.M. Calvo, L. Stewart, M.K. Sogge, G. Bland, and T. Arundel. 2008. Yellow-billed cuckoo distribution, abundance, and habitat use along the lower Colorado River and its tributaries, 2007 annual report: U.S. Geological Survey Open-File Report 2008–1177.
- Johnson, M.J. 2009. Understanding the habitat needs of the declining western yellow-billed cuckoo: U.S. Geological Survey Fact Sheet 2009-3091, 2 p.
- Krausman, P.R., L.K. Harris, C.L. Blasch, K.K.G. Koenen, and J. Francine. 2004. Effects of military operations on behavior and hearing of endangered Sonoran pronghorn. *Wildlife Monographs* 157:1-41.
- Loss, S.R., T. Will, and P.P. Marra. 2014. Direct mortality of birds from anthropogenic causes. *Annual Review of Ecology, Evolution, and Systematics* 46:99-120.
- Loss, S.R., T. Will, and P.P. Marra. 2015. Refining estimates of bird collision and electrocution mortality at power lines in the United States. *PLOS One* 9:E101565.

- LCR MSCP (Lower Colorado River Multi-Species Conservation Program). 2004. Lower Colorado River Multi-Species Conservation Program, Volume II: Habitat Conservation Plan. Final. Sacramento, California, September.
- LCR MSCP. 2008. Species Accounts for the Lower Colorado River Multi-Species Conservation Program. Bureau of Reclamation, Lower Colorado Region, Boulder City, Nevada, September.
- LCR MSCP. 2016. Species Accounts for the Lower Colorado River Multi-Species Conservation Program. Bureau of Reclamation, Lower Colorado Region, Boulder City, Nevada, June.
- Manville, A.M. 2005. Bird Strikes and Electrocutions at Power Lines, Communication Towers, and Wind Turbines: State of the Art and State of the Science –Next Steps toward Mitigation. Pages 1051-1064 in U.S. Forest Service General Technical Report PWS-GTR-191.
- McCall, L.J., W.J. Goldsmith, B.R. Kesner, and P.C. Marsh. 2017. Population Status and Distribution of Razorback Suckers and Bonytail Downstream from Palo Verde Diversion Dam. 2017 Interim Report. Marsh & Associates, LLC., Tempe, Arizona, September
- McClure, C.J.W. E.A. Johnson, and R. Unnasch. 2015. Western Yellow-billed Cuckoo (*Coccyzus americanus occidentalis*) (YBCU) Basic Conceptual Ecological Model for the Lower Colorado River. Bureau of Reclamation, Lower Colorado Region, Boulder City, Nevada, September.
- McClure, C.J.W. E.A. Johnson, and R. Unnasch. 2016. Southwestern Willow Flycatcher (*Empidonas traillii extimus*) (SWFL) Basic Conceptual Ecological Model for the Lower Colorado River. Bureau of Reclamation, Lower Colorado Region, Boulder City, Nevada, June.
- McLeod, M.A., S. Nichols, and A. Pellegrini. 2018. Southwestern Willow Flycatcher Surveys, Demography, and Ecology along the Lower Colorado River and Tributaries, 2017 Annual Report. Prepared for the Lower Colorado River Multi-Species Conservation Program, Bureau of Reclamation, Boulder City, Nevada.
- McLeod, M.A., A. Pellegrini, and G. Cummins. 2019. Southwestern Willow Flycatcher Surveys, Demography, and Ecology along the Lower Colorado River and Tributaries – 2013–2017 Summary Report. Prepared for the Lower Colorado River Multi-Species Conservation Program, Bureau of Reclamation, Boulder City, Nevada.
- McNeil, S.E., D. Tracy, J.R. Stanek, and J.E. Stanek. 2013. Yellow-billed Cuckoo Distribution, Abundance and Habitat use on the Lower Colorado River and Tributaries. 2008-2012 Summary Report. Prepared for the Lower Colorado River Multi-Species Conservation Program, Bureau of Reclamation, Boulder City, Nevada, May.
- McNeil S.E., D. Tracy, and C. Cappello. 2015. Loop Migration by a Western Yellow-Billed Cuckoo Wintering in the Gran Chaco. *Western Birds* 46:244-255.
- Minckley, W., P.C. Marsh, J.E. Deacon, T.E. Dowling, P.W. Hedrick, W.J. Matthews, and G. Mueller. 2003. A Conservation Plan of Native Fishes of the Lower Colorado River. *Bioscience* 53: 219–234.

- O'Brien, C. S., S. S. Rosenstock, J.J. Hervert, J.L. Bright, and S.R. Roe. 2005. Landscape-level models of potential habitat for Sonoran pronghorn. *Wildlife Society Bulletin* 33(1): 24-34. Parametrix, Inc., and Southern Sierra Research Station. 2018. Yellow-billed Cuckoo Surveys on the Lower Colorado River, 2017 Annual Report. Submitted to the Lower Colorado River Multi-Species Conservation Program, Bureau of Reclamation, Boulder City, Nevada.
- Parametrix, Inc., and Southern Sierra Research Station. 2018. Yellow-billed Cuckoo Surveys on the Lower Colorado River, 2017 Annual Report. Prepared for Lower Colorado River Multi-Species Conservation Program, Bureau of Reclamation, Boulder City, Nevada, February.
- Rautenstrauch, K.R., and P.R. Krausman. 1989. Influence of water availability and rainfall on movements of desert mule deer. *Journal of Mammalogy*. 70:1987-201.
- Rioux, S., J-P.L. Savard, and A.A. Gerick. 2013. Avian mortalities due to transmission line collisions: a review of current estimates and field methods with an emphasis on applications to the Canadian electric network. *Avian Conservation and Ecology* 8:7.
- Sogge, M.K., Ahlers, Darrell, and Sferra, S.J., 2010, A natural history summary and survey protocol for the southwestern willow flycatcher: U.S. Geological Survey Techniques and Methods 2A-10.
- Sporer, M.K., J.D. Dwyer, B.D. Gerber, R.E. Harness, and A.K. Pandey. 2013. Marking Power Lines to Reduce Avian Collisions Near the Audubon National Wildlife Refuge, North Dakota. *Wildlife Society Bulletin* 37:1-9.
- Tyus, H.M. 1987. Distribution, reproduction, and habitat use of the razorback sucker in the Green River, Utah, 1979–1986. *Transactions of the American Fisheries Society* 116:111–116.
- Tyus, H.M. and C.A. Karp. 1989. Habitat use and streamflow needs of rare and endangered fishes, Yampa River, Colorado. U.S. Fish and Wildlife Service, Biological Reports 89(14):1–27.
- Unitt, P. 1987. *Empidonax traillii extimus*: an endangered subspecies. *Western Birds* 18:137–162.
- USBR (U.S. Bureau of Reclamation. 2015. Native Fish Augmentation Plan, 2015–2020. Lower Colorado River Multi-Species Conservation Program, Bureau of Reclamation, Lower Colorado Region, Boulder City, Nevada, September.
- USFWS. 2002a. Southwestern Willow Flycatcher Recovery Plan, Region 2, Albuquerque, NM.
- USFWS 2002b. Bonytail (*Gila elegans*) Recovery Goals. Amendment and Supplement to the Bonytail Chub Recovery Plan. U.S. Fish and Wildlife Service Mountain-Prairie Region, Denver, Colorado, August.
- USFWS. 2006. California Least Tern (*Sterna antillarum browni*) 5-Year Review Summary and Evaluation. USFWS Carlsbad Fish and Wildlife Office, Carlsbad, California, September.
- UFWS 2010. Yuma Clapper Rail Recover Plan. Draft First Revision. U.S. Fish and Wildlife Service, Southwest Region, Albuquerque, New Mexico.
- USFWS. 2012. Bonytail (*Gila elegans*) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Upper Colorado River Endangered Fish Recovery Program, Denver, Colorado, July.

- USFWS. 2014a. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Western Distinct Population Segment of the Yellow- Billed Cuckoo. August 15, 2014.
- USFWS. 2014b. Yuma Clapper Rail (*Rallus longirostris yumanensis*).
https://www.fws.gov/nevada/protected_species/birds/species/yucr.html. April 16, 2014.
- USFWS. 2014c. Biological and Conference Opinion and Conference Report on the Proposed Southline Transmission Project. USFWS, Phoenix, AZ, December.
- USFWS. 2015a. Conference Opinion on Effects of the SunZia Transmission Line Project on Western Yellow-billed Cuckoo Proposed Critical Habitat. USFWS, Phoenix, AZ, May.
- USFWS. 2015b. Reinitiation of Consultation on the Proposed Southline Transmission Project to Reflect an Update to the Agency Preferred Alternative for the Final Environmental Impact Statement (Final EIS). USFWS, Phoenix, AZ, November.
- USFWS. 2016. Recovery Plan for the Sonoran pronghorn (*Antilocapra americana sonoriensis*), Second Revision. U.S. Fish and Wildlife Service, Southwest Region, Albuquerque, New Mexico. November.
- USFWS. 2017. Formal Section 7 Consultation on the U.S. Army Yuma Proving Ground's Extended Range Cannon Artillery Test Program, Yuma and Maricopa Counties, Arizona. Arizona Ecological Services Office, Phoenix. May.
- USFWS. 2019. Information for Planning and Conservation. Species List. <https://ecos.fws.gov/ipac/>. May 20, 2019.
- Witham, J.H., and E.L. Smith. 1979. Desert bighorn movements in a southwestern Arizona mountain complex. Desert Bighorn Council Transactions 23:20-24.
- Young, L.; A. Angueira, D. Simpson-Colebank, K. Nicholson, A. Eddie, H. English, L. Swanson, and R. Valencia. 2017. Biological Assessment for Integrated Vegetation Management within Authorized Power Line Rights-of-Way on Bureau of Land Management Lands in Arizona. BLM, Phoenix. February.

Intentionally Left Blank

APPENDIX A – IMPACT MINIMIZATION AND CONSERVATION MEASURES FROM THE EIS

Intentionally Left Blank

Appendix A. Impact Minimization and Conservation Measures Resulting from the EIS

This appendix lists the subset of impact minimization and conservation measures required of the TWL Transmission Line Project that are most applicable for minimizing impacts and conserving threatened and endangered species. The following measures required during implementation of the project are listed in the table below.

- Design features and applicant proposed measures (APMs) proposed by DCRT (BLM 2018, Appendix 2A).
- Best management practices (BMPs) provided by BLM (BLM 2018, Appendix 2A).
- Mitigation measures (MMs) required by BLM in response to potential environmental impacts identified in the Draft EIS (BLM 2018, Appendix 2 Section 2.4).
- Conservation and management actions (CMAs) from the California Desert Conservation Area Plan that must be implemented on BLM-administered land in California (BLM 2018, Appendix 2C).

Following that table, MMs are listed that are to be implemented in Californian and required by the California Public Utilities Commission to comply with the California Environmental Quality Act (BLM 2018, Appendix 1C).

See the Project Draft EIS (BLM 2018) as revised for a complete list and description of impact minimization and conservation measures.

Type	Number	Description
APM	AES-01: Vegetation Removal and Grading	During Project construction activities, the amount of existing vegetation cleared from the route would be kept to the minimum as much as practicably possible. Grading would occur as minimally as practicable and would follow the existing land contours as much as possible.
APM	AES-02: Work Area Reclamation	Upon completion of the Project, all construction material and debris from the permanent ROW and temporary staging areas would be removed and the areas restored. All work areas would be graded and restored to as close to preconstruction conditions as possible.
BMP	AES-02: Work Area Reclamation	Work area reclamation would include pulling and tensioning sites; all disturbed work areas associated with the Project.
APM	AES-06: Siting Staging and Laydown Areas	The Project would avoid siting staging and laydown areas in visually sensitive areas to the extent practicable. Staging areas would be located close to transportation access points and would be sited to take advantage of previously disturbed areas to the extent practicable.
BMP	AES-06: Siting and Laydown Areas	APM AES-06 would apply to all Project work areas. Also, work areas would be located to minimize impacts, including but not limited to, biological and visual.
APM	BIO-01: Worker Environmental Awareness Program (WEAP)	Before starting any work, including mowing, staging, installing stormwater control structures, implementing other BMPs, removing trees, construction, and restoration, all employees and contractors performing activities and new construction would receive training on environmental requirements that apply to their job duties and work. If additional crewmembers arrive later in the job, they would be required to complete the training before beginning work. Training would include a discussion of the avoidance and minimization measures being implemented and would include information on the Federal and state Endangered Species Acts and the consequences of not complying with these Acts. An educational

Type	Number	Description
		brochure would be provided to construction crews working on the Project. This brochure would include color photographs of special-status species as well as a discussion of avoidance and minimization measures.
BMP	BIO-01: Worker Environmental Awareness Program (WEAP)	The worker education program would provide interpretation for non-English speaking workers.
MM	BIO-01	A Compensation Plan would be developed to meet BLM requirements from the DRECP and other mitigation agreements. The Compensation Plan would include calculations of compensation ratios and mitigation acreages for loss of habitat for special status and protected native plant species, special status plant communities, Mojave desert tortoise, Sonoran desert tortoise, and any other biological resource requiring additional mitigation. As consistent with BLM policy and resource management plans, compensatory mitigation could include payment of an in-lieu fee; acquiring mitigation land or conservation easements; restoration or habitat enhancement activities on public lands; or a combination of the three (LUPA-BIO-COMP-1, LUPA-BIO-COMP-2, DFA-VPL-BIO-COMP-1, and LUPA-COMP-1; Appendix 2C).
APM	BIO-02: Biological Monitoring and Preconstruction Survey	A qualified biological monitor would be present on the Project site during all work activities within habitat of special-status animal species. The qualified biologist would conduct a preconstruction survey of those areas immediately before work activities begin and would locate and fence off any present individuals of special status plant species.
BMP	BIO-02: Biological Monitoring and Preconstruction Survey	Multiple biological monitors would be provided so any work site within habitat of special status species is monitored concurrently if needed.
APM	BIO-03: Approved Work Areas	To the extent practicable, stockpiling of material would be allowed only within the established work area. Vehicles and equipment would be parked on pavement, existing roads, and previously disturbed areas within identified work areas or access roads.
BMP	BIO-03: Approved Work Areas	The BLM would approve areas to be used for stockpiling, vehicle parking, or other construction support activity that would occur outside established work areas.
APM	BIO-04: Environmentally Sensitive Areas and Fencing	Environmentally sensitive areas, such as the riparian areas, xeroriparian washes, and other habitat of special status species, would be identified in the field. Barrier fences or stakes would be installed at the edge of the easement or around the sensitive area to minimize the possibility of inadvertently encroaching into sensitive habitat.
APM	BIO-05: Additional Prohibitions	Trash dumping, firearms, open fires, and pets would be prohibited at all work locations and access roads. Smoking would be prohibited along the Project alignment.
APM	BIO-06: Trash Handling	All food scraps, wrappers, food containers, cans, bottles, and other trash from the work area would be disposed of in closed trash containers.
APM	BIO-07: Monofilament Plastic	No monofilament plastic would be used for erosion control (for example, matting, fiber roll, wattles, silt fencing backing). Appropriate materials include burlap, coconut fiber, or other materials as identified in the general and site-specific SWPPP.
APM	BIO-08: Refueling	Vehicular and equipment refueling should not occur within 100 feet of a wetland or drainage unless secondary containment is constructed, for example, a berm and lined refueling area. Proper spill prevention and cleanup equipment would be maintained in all refueling areas in

Type	Number	Description
		accordance with the Spill Prevention, Control, and Countermeasures Plan (SPCC) for the Project.
APM	BIO-09: Escape Ramps	All excavated steep-walled holes or trenches more than 1-foot-deep would be covered at the end of each working day with plywood or similar material or would be provided with one or more escape ramps constructed of earth fill or wooden planks. Each trench or hole would be inspected for wildlife at the beginning of each work day and before such holes or trenches are filled. Wildlife found trapped in trenches or holes would be relocated to suitable habitat outside the work area. If possible, pipes and culverts greater than 3 inches in diameter would be stored on dunnage to prevent wildlife from taking refuge in them, to the extent feasible.
APM	BIO-10: Erosion and Dust Control	The BMPs included in the SWPPP would be implemented during construction to minimize impacts associated with erosion. Watering for dust control during construction would also be used as described previously (AQ-01). Watering shall not result in prolonged ponding of surface water that could attract wildlife to the work area. Minimal or no vegetation clearing and/or soil disturbance would be conducted for site access and construction in areas with suitable topography (i.e., overland driving/overland access).
APM	BIO-11: Vegetation Management Plan	The Vegetation Management Plan (Appendix 2B) would be approved by the BLM and implemented. That Plan describes the surveys, permitting, fee payments, and plant protection to be conducted in areas where Project design would not eliminate the need for vegetation control for the project to be in compliance with NERC requirements. Vegetation would be trimmed or otherwise controlled for safe operation of the transmission line and would be designed to minimize impacts on special status species to the extent practicable. At a minimum, vegetation treatments shall incorporate the measures identified in the June 2006 Memorandum of Understanding regarding vegetation management along ROW for electrical transmission and distribution facilities (USDA 2006). The Plan also would describe how vegetation would be salvaged, as needed, in order to comply with the applicable Arizona Native Plant Law and California regulations.
BMP	BIO-11: Vegetation Management Plan	In addition to the description of the Vegetation Management Plan in the corresponding APM BIO-11, the plan would also: <ul style="list-style-type: none"> • Meet BLM guidelines for mapping and surveying of cacti, yuccas, and succulents. • Include a wire zone/border zone/effective border zone approach to vegetation maintenance as described in Ballard, et al. 2007. • Identify tall vegetation species by geographic reach and growth rates, from relevant scientific literature (such as Dresner 2003), to be used to determine maximum allowable vegetation heights in the context of wire zone/border zone/effective border zone concepts, to accommodate identified growth periods (e.g., ten years) based on the specific vegetation community. Species examples include, but are not limited to, saguaro cactus, ironwood, palo verde, cottonwood, Gooding willow.
APM	BIO-12: Noxious and Invasive Species Control	A Noxious Weed Control Plan (Appendix 2B) would be developed, approved by the BLM, and implemented prior to initiation of ground disturbing activities. That Plan would identify noxious and invasive species to be addressed in the Project Area, describe measures to conduct preconstruction weed surveys, reduce the potential introduction or spread of noxious weeds and invasive species during construction, and monitor and control weeds during operation of the transmission line. It would be designed to minimize impacts on special status species to the

Type	Number	Description
		extent practicable. Coordination with resource agencies regarding invasive plant species would be conducted before construction. BMPs would include use of weed-free straw, fill, and other materials; requirements for washing vehicles and equipment arriving on site; proper maintenance of vehicle inspection and wash stations; requirements for managing infested soils and materials; requirements and practices for the application of herbicides; and other requirements in applicable BLM Weed Management Plans.
APM	BIO-13: Riparian Habitat Avoidance	Riparian areas and xeroriparian drainages that occur within the ROW would be denoted as environmentally sensitive areas and would be avoided during construction to the extent practicable. Existing topography would be restored to pre-Project conditions to the extent possible.
APM	BIO-14: Minimizing Vegetation Clearing	In areas with suitable topography, minimal or no vegetation clearing and soil disturbance would be conducted for site access and construction (i.e. overland driving/overland access). Overland driving/overland access would be used in areas that support the necessary construction equipment. Upgrading of existing access roads and construction of new access roads would be implemented as necessary for safe construction activities.
APM	BIO-15: Reclamation and Restoration	A Habitat Restoration and Monitoring Plan would be developed, approved by BLM, and implemented for construction and operation of the Project. Revegetate all sites disturbed during construction that would not be required for operation of the transmission line, and restore disturbed areas to the extent practicable, given the arid desert environment. The Plan would describe in detail methods for surveying and characterizing vegetation in disturbed areas before construction; topsoil salvage and management, erosion control, post construction recontouring and site preparation, seeding and planting, and post-construction watering, monitoring, and remediation. It would be designed to reduce impacts on special status species to the extent practicable.
BMP	BIO-15: Reclamation and Restoration	As a part of the Habitat Restoration and Monitoring Plan, the soil horizons would be stored separately for the areas where the success of restoration could be crucial for rare plant species.
APM	BIO-17: Limit Off-Road Vehicle Travel	Vehicular travel would be limited to established roads to the maximum extent practicable.
BMP	BIO-19: Colorado River	In the vicinity of the Colorado River, existing structure spacing and conductor heights would be matched to the greatest extent practical to reduce the potential for bird collisions with the power line. The transmission line would span the Colorado River and the minimum number of structures possible would be located within the undeveloped floodplain. The term, "vicinity of the Colorado River" is defined to mean the river crossing, floodplain, and associated agricultural lands. In these areas, conductor bundles would be in a horizontal, parallel configuration, and match existing structure spacing and conductor heights to the greatest extent practical to reduce the potential for bird collisions with the power line. No guyed structures would be used at these locations.
APM	BIO-20: Migratory Bird Nesting Season During Construction	If construction is scheduled during the nesting bird season (generally February 1 through August 31), the work area would be surveyed for birds protected under the Migratory Bird Treaty Act and applicable Arizona and California codes. Active nests identified during preconstruction surveys would require protective buffers or visual barriers to ensure compliance with those regulations. If the qualified biologist determines that construction activities would cause distress to nearby nesting birds, larger buffers or construction delays might be necessary to allow the birds to successfully fledge from the nest.

Type	Number	Description
APM	BIO-21: Reduction of Avian Collision	Current guidelines and methodologies appropriate to infrastructure size (APLIC 2006, 2012) appropriate to infrastructure size would be used in the design of the proposed transmission and SCS distribution facilities to minimize the potential for raptors and other birds to collide with the lines during operations and be electrocuted. For example, aerial marker balls or other visibility markers would be placed at and near the crossing of the Colorado River to increase the visibility of the transmission line to birds using that movement corridor. Further, placement of lines significantly above existing transmission lines, topographic features, or tree lines would be avoided. These measures would be implemented, where practicable, in conjunction with an Avian Protection Plan for the Project (APP).
BMP	BIO-21: Reduction of Avian Collision and Electrocution	Aerial marker balls or other visibility markers would be placed on overhead ground wires (not conductors) at crossing of the Colorado River and floodplain to increase visibility to birds using that movement corridor and marking any other static wires to improve visibility and reduce collisions. Deterrents would be added to reduce nesting and perching by ravens and other predatory birds. The APP would include requirements for monitoring the effectiveness of anti-electrocution design.
BMP	BIO-25: Sensitive Animal Surveys	A survey would be conducted of the selected route prior to construction of all work areas to identify special-status animal species, including Mojave desert tortoises, burrowing owls, and Mojave fringe-toed lizards. Where possible, and as required by the BLM, special-status species and vegetation alliances would be avoided during construction.
BMP	BIO-28: Raven Management Plan	The Raven Management Plan would be implemented for all activities to address food and water subsidies and roosting and nesting sites specific to the Common Raven. These include identification of monitoring reporting procedures and requirements; strategies for refuse management; as well as design strategies and passive repellent methods to avoid providing perches, nesting sites, and roosting sites for Common Ravens. As consistent with BLM policy and resource management plans, compensatory mitigation would be provided that contributes to LUPA-wide raven management associated with lands in the DRECP.
BMP	BIO-29: Bird and Bat Conservation Strategy	The Bird and Bat Conservation Strategy would provide guidance on conservation measures applicable to bird and bat species present in the Project Area, including a nesting bird management plan and a nest management plan.
BMP	BIO-32: Seasonal Restriction Dates	Species-specific seasonal restriction dates would be observed.
BMP	BIO-33: Construction Lighting	All long-term nighttime lighting would be directed away from riparian and wetland vegetation, occupied habitat, and suitable habitat areas for sensitive species. Long term nighttime lighting, if required, would be directed and shielded downward to avoid interference with the navigation of night-migrating birds and to minimize the attraction of insects as well as insectivorous birds and bats to project infrastructure. Long-term nighttime lighting would avoid the use of constant-burn lighting.
BMP	BIO-34: Prevention of Puddles During Dust Abatement	The application of water and/or other palliatives for dust abatement in construction areas and during Project operations and maintenance would be done with the minimum amount of water necessary to meet safety and air quality standards and in a manner that prevents the formation of puddles, which could attract wildlife and wildlife predators.
BMP	BIO-35: Presence of Wildlife in Construction Materials or Equipment	All construction materials would be visually checked for the presence of wildlife prior to their movement or use. Any wildlife encountered during the course of these inspections would be allowed to leave the construction area unharmed.

Type	Number	Description
BMP	BIO-36: Feeding or Harassment of Wildlife	The intentional feeding or harassment of wildlife on site is prohibited.
BMP	BIO-38: Use of State of the Art and Commercially-available Technology	Use state-of-the-art, commercially-available construction and installation techniques, as approved by BLM, appropriate for the specific activity/project and site, that minimize new site disturbance, soil erosion and deposition, soil compaction, disturbance to topography, and removal of vegetation.
BMP	BIO-39: Bird- and Bat-Friendly Fencing	When fencing is necessary, use bird and bat compatible design standards.
BMP	BIO-42: Dead and Downed Wood	Promote appropriate levels of dead and downed wood on the ground, outside of campground areas, to provide wildlife habitat, seed beds for vegetation establishment, and reduce soil erosion, as determined appropriate on an activity-specific basis.
BMP	BIO-46: Compensation for Loss of Desert Riparian Woodland	The loss of desert riparian woodland would be compensated at a ratio of 5:1. Compensation acreage requirements may be fulfilled through non-acquisition (i.e., restoration and enhancement), land acquisition (i.e., preserve), or a combination of these options, depending on the activity specifics and BLM approval/authorization.
BMP	BIO-47: Riparian Functioning Condition	BLM would manage all riparian areas to be maintained at, or brought to, proper functioning condition.
BMP	BIO-48: Flight Diverters	Bird flight diverters would be installed on the Colorado River and associated floodplain crossings and other areas of high bird use as recommended by BLM in consultation with USFWS, AGFD, and CDFW.
BMP	BIO-50: Engineering Controls	Appropriate engineering controls would be used to minimize impacts on dry wash, dry wash woodland, and chenopod scrub, including downstream occurrences, resulting from surface water runoff, erosion, sedimentation, altered hydrology, accidental spills, or fugitive dust deposition to these habitats. Appropriate buffers and engineering controls would be determined through agency consultation.
BMP	BIO-51: Conductor Clearance	To minimize vegetation trimming, micro-siting and design considerations (including tower height) would be applied so the catenary formed by the conductors (the bottom of the sag) avoids saguaros and is not directly over wash vegetation, to the extent practicable.
BMP	BIO-52: California Riparian Habitat and Rare Plant Alliance Avoidance	In California, as part of micro-siting towers, a 200-foot setback from the outer perimeter of Colorado semi-desert wash woodland/scrub vegetation community would be applied. Preconstruction surveys of disturbance zones would include preparation of maps delineating special vegetation features. Minor incursions would be allowed to balance minimizing vegetation trimming (see BIO-51) while maintaining an appropriate setback, as determined based on site-specific conditions. No structure would be placed within, and no new access roads would pass through, these washes to the extent practicable.
BMP	BIO-55: Access within Focus and BLM Special Status Species Suitable Habitat	Construction of new roads and/or routes would be avoided to the extent practicable within Focus and BLM Special Status Species suitable habitat within identified linkages for those Focus and BLM Special Status Species, unless the new road and/or route is beneficial to minimize net impacts to natural or ecological resources of concern.
BMP	BIO-56: Sonoran Pronghorn	Measures, as required by the USFWS in any applicable Biological Opinion, would be implemented.
APM	HAZ-01: Hazardous Substance Control and Emergency Response	DCRT would implement its hazardous substance control and emergency response procedures as needed in conjunction with a Hazardous Substance Control and Containment Plan and Emergency Response Plan for the Project. The procedures identify methods and techniques to

Type	Number	Description
		<p>minimize the exposure of the public and site workers to potentially hazardous materials during all phases of Project construction through operation. They address worker training appropriate to the site worker's role in hazardous substance control and emergency response. The procedures also require implementing appropriate control methods and approved containment and spill-control practices for construction and materials stored on site. If it were necessary to store chemicals on site, they would be managed in accordance with all applicable regulations. Material safety data sheets would be maintained and kept available on site, as applicable. Project construction would involve soil surface blading/leveling and excavation. In the event that soils suspected of being contaminated (on the basis of visual, olfactory, or other evidence) are removed during site grading activities or excavation activities, the excavated soil would be tested and, if contaminated above hazardous waste levels, would be contained and disposed of at a licensed waste facility. The presence of known or suspected contaminated soil would require testing and investigation procedures to be supervised by a qualified person, as appropriate, to meet state and federal regulations. All hazardous materials and hazardous wastes would be handled, stored, and disposed of in accordance with all applicable regulations by personnel qualified to handle hazardous materials. The hazardous substance control and emergency response procedures include, but are not limited to, the following:</p> <ul style="list-style-type: none"> • Proper disposal of potentially contaminated soils. • Establishing site-specific buffers for construction vehicles and equipment near sensitive resources. • Emergency response and reporting procedures to address hazardous material spills. • Stopping work at that location and contacting the County Fire Department Hazardous Materials Unit immediately if visual contamination or chemical odors are detected; work would be resumed at this location after any necessary consultation and approval by the Hazardous Materials Unit. <p>DCRT would complete its Emergency Action Plan Form as part of Project tailgate meetings. The purpose of the form is to gather emergency contact numbers, first aid location, work site location, and tailgate information.</p>
BMP	HAZ-03: Equipment & Material Inventory	DCRT would provide the BLM with an inventory of equipment and materials to cover each hazardous material used at any time during the life of the Project, updating as additions to equipment and materials are made. Appropriate equipment and materials would follow specific recommendations for individual HazMat types in BLM Handbooks, EPA guidelines, and from the California Department of Toxic Substance Control (DTSC).
AMP	MISC-01	An Environmental Compliance Management Plan would be prepared.
BMP	MISC-03	The final POD would identify areas where the final structure site temporary disturbance area could be reduced and estimates of reduced areas, in advance of field staking for the Project.
BMP	MISC-04	Locations for many areas of temporary disturbance would not been definitively identified until preparation of the final POD. All temporary disturbance would be located in previously disturbed areas and/or outside ecologically and aesthetically sensitive areas to the maximum extent practicable.
APM	NO-02: Noise Minimization with Quiet Equipment	In area in close proximity to sensitive receptors, quiet equipment (for example, equipment that incorporates noise control elements into the

Type	Number	Description
		design; quiet model air-compressors or generators can be specified) would be used during construction whenever possible.
BMP	NO-07: Sensitive Wildlife Protection	To the extent feasible, locate stationary noise sources that exceed background ambient noise levels away from known or likely locations of and BLM sensitive wildlife species and their suitable habitat.
BMP	TT-04: Access Plan	An Access Plan would be required to identify all routes where new disturbance and/or cross-country travel is proposed. Existing access would be used to the maximum extent practicable; new access would only be created when there is no other reasonable or practicable means of access.
BMP	TT-07: Routes of Travel	Routes of travel for the Project on BLM-managed lands outside established roadways would be limited to those routes on the approved Access Plan.
BMP	TT-08: Prohibit Cross-Country Vehicle Use Outside Designated Work Areas	Within Project boundaries, prohibit cross-country vehicle and equipment use outside of approved designated work areas to prevent unnecessary ground and vegetation disturbance.
BMP	VEG-01: Removal of Vegetation	Any removal of vegetation resources would be conducted in accordance with BLM IB 2012-097.
BMP	VEG-02: Avoid Vegetation Removal	Minimize natural vegetation removal through implementation of crush and drive or cut or mow vegetation rather than removing entirely. Locations for drive and crush travel or cut/mow would be determined in conjunction with the Access Road Plan (Appendix 2B).
APM	WQ-01: SWPPP Development and Implementation	<p>Following Project approval, DCRT would prepare and implement a SWPPP or an amendment to an existing SWPPP to minimize construction impacts on surface water and groundwater quality. Implementation of the SWPPP would help stabilize graded areas and reduce erosion and sedimentation. The Plan would designate BMPs that would be adhered to during construction activities. Erosion and sediment control measures, such as straw wattles, covers, and silt fences, would be installed prior to ground disturbance, based on the anticipated volume and intensity of precipitation, the nature of stormwater runoff in the Project Area, and the soil types within the Project Area. Suitable stabilization measures would be used to protect exposed areas during construction activities, as necessary and final stabilization would be completed when construction materials, waste, and temporary erosion and sediment control measure have been removed. During construction activities, measures would be implemented to prevent contaminant discharge from vehicles and equipment, including complying with the Spill Prevention, Control, and Countermeasures requirements in 40 CFR 112. The Project SWPPP would include erosion control and sediment transport BMPs to be used during construction. BMPs, where applicable, would be designed by using specific criteria from recognized BMP design guidance manuals. Erosion-minimizing efforts may include measures such as the following:</p> <ul style="list-style-type: none"> • defining ingress and egress within the Project site, • implementing a dust control program during construction, and • properly containing stockpiled soils. <p>Erosion control measures identified would be installed in an area before construction begins and would be properly maintained until construction is complete and final stabilization begins. Temporary measures such as silt fences or wattles, intended to minimize sediment transport from temporarily disturbed areas, would remain in place until disturbed areas have stabilized.</p>

Type	Number	Description
		<p>The Plan would be updated during construction as required by the SWRCB and ADEQ. The Plan would include the following components, in accordance with ADEQ requirements for coverage under the General Permit:</p> <ul style="list-style-type: none"> • stormwater team qualifications and contact information; • identification of operators; • nature of construction activities; • sequence and estimated dates of construction activities; • site description; • site map(s); • receiving waters; • control measures to be used during construction activity; • summary of potential pollutant sources; • use of treatment chemicals; and • pollution prevention procedures, including spill prevention and response and waste management procedures.
APM	WQ-02: Worker Environmental Awareness Program Development and Implementation	The Project's worker environmental awareness program would communicate environmental issues and appropriate work practices specific to this Project. This awareness would include spill prevention and response measures and proper BMP implementation. The training would emphasize site-specific physical conditions to improve hazard prevention (such as identification of flow paths to nearest water bodies) and would include a review of all site-specific water quality requirements, including applicable portions of erosion control and sediment transport BMPs, Health and Safety Plan, and Hazardous Substance Control and Emergency Response Plan.
APM	WQ-03: Vehicles and Equipment Fueling and Maintenance	Vehicle and equipment fueling and maintenance operations would be conducted in designated areas only; these areas would be equipped with appropriate spill control materials and containment.
BMP	WQ-04: Non-petroleum Dust Palliatives	Palliatives used for dust control would be non-petroleum products in addition to non-toxic, as specified in AQ-01.
BMP	WQ-06: Avoidance of Hydrologic Alterations	Consideration shall be given to design alternatives that maintain the existing hydrology of the site or redirect excess flows created by hardscapes and reduced permeability from surface waters to areas where they would dissipate by percolation into the landscape. All hydrologic alterations shall be avoided that could reduce water quality or quantity for all applicable beneficial uses associated with the hydrologic unit in the project area, or specific mitigation measures shall be implemented that would minimize unavoidable water quality or quantity impacts, as determined by BLM in coordination with USFWS, CDFW, and other agencies, as appropriate.
BMP	WQ-07: Structures in Floodplains	No permanent structures would be placed in floodplains that are narrower at the ROW crossing than the typical span width of 1,200 feet (i.e., it is assumed that such floodplains could be spanned and avoided).

California Environmental Quality Act Biological Resources Mitigation

To meet California Environmental Quality Act requirements, biological resource MMs, below, have been developed for California (incorporating applicable APMs, BMPs, and CMAs) to reduce impacts to less than significant. Biological resource MMs shall be implemented prior to-, during-, and post-construction activities, operations, and decommissioning.

MM BIO-CEQA-1 Implement Biological Resources Applicant Proposed Measures, Best Management Practices, and Conservation and Management Actions.

The APMs, BMPs and CMAs in Sections 2.4.2 and 2.4.3 above provide a suite of measures, practices, and actions that shall be implemented as part of the Project. APMs, BMPs, and CMAs shall be implemented prior to, during, and after Project activities to avoid or minimize Project related impacts on biological resources. If an APM, BMP, or CMA is subjective, such as containing text that states; "where appropriate," "where applicable," "where feasible," or similar language, the BLM and CPUC shall be consulted to determine the applicability of each measure prior to the disturbance of a covered resource. Compliance with APMs, BMPs, and CMAs shall be documented, and a weekly report shall be provided to the BLM and CPUC. The Applicant shall provide a synopsis of the Weekly Compliance Report to the BLM and CPUC Monthly Compliance Report. Each report shall include a summary of the construction activities completed, a review of the sensitive plants and wildlife encountered, a list of compliance actions and any remedial actions taken to correct the actions, and the status of on-going mitigation efforts.

MM BIO-CEQA-1 Implementation

Responsible Party: The Applicant shall ensure that all APMs, BMPs, and CMAs are implemented during construction. If an APM, BMP, or CMA is subjective, the Applicant shall consult with the BLM and/or the CPUC to determine the applicability of each measure.

Timing: APMs, BMPs, and CMAs shall be implemented throughout construction activities.

Mitigation Monitoring and Reporting Program: The Applicant shall develop a weekly report that shall include all applicable APMs, BMPs, and CMAs and the related actions taken in order to be in compliance with these measures. These weekly reports shall be compiled and submitted to the BLM and CPUC monthly.

Standards for Success: Compliance with all applicable APMs, BMPs, and CMAs is achieved throughout construction of the Project.

MM BIO-CEQA-2: Implement a Worker Environmental Awareness Program (WEAP).

BMP-BIO 1 and CMA LUPA-BIO-5 shall be incorporated within this MM BIO-CEQA-2.

- Prior to any work activities on the Project site, including surveying, mobilization, fencing, grading, or construction, a WEAP shall be prepared and implemented by the Applicant. Prior to implementation the WEAP will be approved by the CPUC with a final version completed prior to the issuance of construction permits. The WEAP shall be implemented throughout the duration of Project, including O&M phases. Successful implementation of the WEAP will result in all on-site Project personnel being properly informed and educated on the pertinent environmental concerns related to the Project. One of the main goals of the WEAP, is that it shall reduce unintentional impacts to biological resources within the Project area and ensure that all workers are trained in accordance with this MM. The WEAP shall include, at a minimum, the following items: Maps showing the known locations of listed and/or special-status wildlife, populations of listed and special-status plants and sensitive vegetation communities, riparian habitats,

seasonal depressions and known waterbodies, wetland habitat, exclusion areas, and other construction limitations.

- A discussion of measures to be implemented for avoidance of sensitive resources discussed in the EIS (including this appendix) and the identification of an onsite contact in the event of the discovery of sensitive species on the Project site; this shall include a discussion on micro trash.
- Training materials and briefings shall include, but not be limited to: a discussion of the FESA and CESA; the BGEPA; the MBTA; the APLIC Guidelines; the consequences of non-compliance with these regulations; identification and values of plant and wildlife species and significant natural plant community habitats; hazardous substance spill prevention and containment measures; a contact person and phone number in the event of the discovery of dead or injured wildlife; and a review of mitigation requirements.
- Protocols to be followed when road kill is encountered in the work area, or along access roads, and the identification of an onsite representative to whom the road kill shall be reported. Road kill shall be reported to the appropriate local animal control agency, the CPUC within 24 hours. Road kill of special-status species shall also be reported to the CDFW and/or USFWS within 24 hours or otherwise specified in Project-specific permits.
- Literature and photographs or illustrations of potentially occurring special-status plant and/or wildlife species shall be provided to all Project contractors and heavy equipment operators.
- A special hardhat sticker or wallet size card shall be issued to all personnel completing the training, which shall be carried with the trained personnel at all times while on the Project site.
- All new personnel shall receive this training and may work in the field for no more than 5 days without participating in the WEAP.
- A log of all personnel who have completed the WEAP training shall be kept on site.
- A copy of the WEAP shall be kept at an easily accessible location within the Project site (i.e., foreman's vehicle, construction trailer, etc.) for the duration of the Project.
- A standalone version of the WEAP shall be developed, that covers all previously discussed items above, and that can be used as a reference for maintenance personnel during Project operations.
- The Applicant shall ensure that interpretation of the WEAP is available for all non-English speaking workers.

MM BIO-CEQA-2 Implementation

Responsible Party: The Applicant shall ensure that a qualified biologist (approved by the CPUC) prepares the WEAP and that it is implemented for all on-site Project personnel.

Timing: Prior to construction, and during construction for all new on-site Project personnel.

Mitigation Monitoring and Reporting Program: The WEAP shall be developed by a qualified biologist designated by the Applicant and approved by the CPUC. A copy of the WEAP shall be kept at an easily accessible location within the Project site for the duration of the Project. A log of all personnel who have completed the WEAP training shall be kept on site.

Standards for Success: All construction/Project related personnel are trained in the key characteristics for identifying and avoiding impacts to special-status species and sensitive habitats.

MM BIO-CEQA-3: Implement Biological Construction Monitoring.

APM BIO-2, BMP BIO-02, and CMA LUPA BIO-2 shall be incorporated within this MM BIO-CEQA-3.

No more than 30 days prior to the start of site mobilization or ground disturbing activities, the Applicant shall designate a qualified biologist(s) to monitor construction of the Project. Multiple qualified biologists shall be designated by the Applicant, as needed. Designated qualified biologists must be approved by the CPUC, BLM, and CDFW prior to conducting construction monitoring. The biologist(s) must be knowledgeable with the life history and habitat requirements of Federal and State listed and special-status plants, mammals, reptiles, amphibians, and birds. The qualified biologist(s) shall conduct clearance surveys for listed and special-status species prior to the start of construction activities each work day during initial site disturbance; clearance surveys can be conducted on a weekly basis thereafter. Any handling of special-status species must be approved by the appropriate Federal and State agencies and be done in accordance with species-specific handling protocols. During initial site disturbance, and for the duration of construction, the qualified biologist(s) shall remain on-site at all times when activities shall occur immediately adjacent to, or within, habitat that supports populations of listed and/or special-status species. The designated biologist(s) shall relocate any terrestrial special-status species that would be impacted by the Project. Permits and/or a MOU may be required for some species. All locations of listed and/or special-status plants shall be flagged for avoidance or salvage, relocation, or transplanting as described in MM VEG-CEQA-4. Similarly, locations of listed and/or special-status wildlife shall be flagged for avoidance and appropriate avoidance buffers established as described in MM WIL-CEQA-1 through MM WIL-CEQA-11. Results of all monitoring shall be recorded on daily site observation reports and include details the construction activities. The daily monitoring reports shall be compiled and submitted to the CPUC, BLM, and CDFW for review on a weekly basis. Contents of the reports shall include at a minimum the date, time of monitoring, location, qualified biologists name, construction activities, biological conditions and species detections, and any issues encountered during the monitoring effort.

If dead or injured special-status wildlife species and/or impacted special-status plant are detected on the construction site, the qualified biological monitor shall, immediately upon finding the remains or injured animal, coordinate with the onsite construction foreman to discuss the events that caused the mortality or injury, if known, and implement measures to prevent future incidents. Details of these measures shall be included within monitoring separate incident report. Species remains shall be collected and frozen as soon as possible, and CDFW and USFWS, as well as all other appropriate Federal and State regulatory agencies, shall be contacted regarding ultimate disposal of the remains. The incident report shall be sent to the CPUC, CDFW and/or USFWS (as appropriate), as well as any other appropriate Federal and State agencies, within five calendar days. The construction biological monitoring report shall at a minimum include: the date, time of the finding or incident (if known), and location of the carcass, injured animal or other impacted species, and the circumstances of its death or injury (if known). Injured animals shall be taken immediately to the nearest appropriate veterinary or wildlife rehabilitation facility.

MM BIO-CEQA-3 Implementation

Responsible Party: The Applicant is responsible for designating qualified biologists to monitor Project construction activities that are within and/or adjacent sensitive habitats, and/or have the potential to impact special-status species.

Timing: During all Project phases if biological resources are pertinent or monitoring is required by the appropriate Federal or State regulatory agency.

Mitigation Monitoring and Reporting Program: Copies of daily monitoring reports shall be compiled and submitted to the CPUC, BLM, and CDFW on a weekly basis. Separate incident reports shall be compiled and submitted to the appropriate Federal and State agencies if

observations of dead, injured or impacted special-status species are observed during monitoring within five calendar days.

Standards for Success: Sensitive biological resources are avoided and/or impacts are reduced to a less than significant level throughout all construction activities.

MM BIO-CEQA-4: Avoidance Measures and Compensation for Impacts to Jurisdictional Waters/Wetlands and/or Sensitive Natural Communities.

The following APMs, BMPs, and CMAs shall be incorporated within this MM BIO-CEQA-4: APM BIO-2; BMP BIO-2; APM BIO-4; APM BIO-11; BMP BIO-11; APM BIO-13; APM BIO-14; APM BIO-15; BMP BIO-15; APM BIO-16; BMP BIO-24; BMP BIO-25; BMP BIO-52; BMP BIO-53; BMP BIO-55; BMP VEG-01; BMP VEG-02; CMA DFA-BIO-IFS-1; CMA DFA-BIO-IFS-2; CMA DFA-VPL-BIO-DUNE-1; CMA LUPA-BIO-1; CMA LUPA-BIO-2; CMA LUPA-BIO-3; CMA LUPA-BIO-4; CMA LUPA-BIO-7; CMA LUPA-BIO-9; CMA LUPA-BIO-13; CMA LUPA-BIO-14; CMA LUPA-BIO-DUNE-1; CMA LUPA-BIO-DUNE-3; CMA LUPA-BIO-DUNE-5; CMA LUPA-BIO-PLANT-1; CMA LUPA-BIO-PLANT-2; CMA LUPA-BIO-RIPWET-1; CMA LUPA-BIO-RIPWET-3; CMA LUPA-BIO-SVF-1; CMA LUPA-BIO-SVF-6; CMA LUPA-SW-13; and CMA LUPA-SW-16.

To avoid, minimize disturbance, and restore impacts to jurisdictional waters/wetlands and sensitive natural communities the following shall be implemented:

- Prior to conducting any Project activities, a formal jurisdictional delineation and mapping of sensitive natural communities shall be conducted following current protocols, guidance, and standards, as defined by the USACE, RWQCB, and CDFW. The Applicant shall ensure that a formal delineation is conducted, and all required regulatory permits are obtained prior to the start of Project construction activities.
- Implement APMs and BMPs to prevent prohibited materials from entering jurisdictional waters/wetlands and/or causing disturbance to sensitive natural communities.
- Construction activities shall be done in such a manner as to avoid and minimize the removal and impacts to jurisdictional waters/wetlands and sensitive natural communities to the extent feasible.
- If jurisdictional waters/wetlands and/or sensitive natural communities are present within the Project area, then they shall be identified as ESAs and flagged by an Applicant designated qualified biologist prior to construction activities.
- If jurisdictional waters/wetlands and/or sensitive natural communities are present within the Project area, then the Applicant shall ensure that the designated qualified biologist is on-site at all times during active work in these areas; including but not limited to within the floodplain, adjacent to and/or in jurisdictional waters/wetlands, and/or in sensitive natural communities. All on-site personnel shall be instructed on the importance of avoiding and minimizing disturbance in these areas if present within the Project area.
- If impacts to jurisdictional waters/wetlands or sensitive natural communities cannot be avoided, the Applicant shall coordinate with the appropriate Federal and State regulatory agencies to obtain authorization from the USACE through a CWA Section 404 USACE Nationwide Permit (NWP) or Individual Permit (IP); the RWQCB through a CWA Section 401 Water Quality Certification (WQC); and the CDFW through a California FGC Section 1602 Lake and Streambed Alteration (LSA) Notification.
- The Applicant shall restore all temporary impacts at a ratio of 1:1 as described in the Vegetation Management Plan (MM-VEG-CEQA-1).

- To compensate for permanent impacts to jurisdictional waters/wetlands, the impacted areas shall be replaced at a minimum ratio of 2:1, but will vary depending on the mitigation strategy used. Permanent impacts to riparian desert woodland habitats (e.g., blue Palo Verde-ironwood woodland, mesquite thickets, bush seepweed) that are jurisdictional shall be mitigated at a ratio of 5:1 (e.g., desert riparian woodland). Additional mitigation may be proposed by each Federal and/or State agency during the regulatory permitting process. The mitigation strategy to compensate for the loss of jurisdictional habitats may be achieved by (a) on-site habitat creation or enhancement with similar species compositions to those present prior to construction; (b) off-site creation, enhancement, and/or preservation; and/or (c) participation in an established mitigation bank program. If offsite lands are used as part of the mitigation strategy, then they shall be permanently protected by establishing a conservation easement. The Applicant shall coordinate with CPUC, BLM, and CDFW to determine the conditions of the conservation easement, including the required acreage to be conserved and the required monitoring and management of the conserved lands, as appropriate. All mitigation for temporary and/or permanent impacts to jurisdictional waters/wetlands and/or sensitive natural communities shall be approved by the appropriate Federal and State regulatory agencies prior to Project activities.
- All created or restored habitats shall be monitored per the requirements in the Vegetation Management Plan (MM-VEG-CEQA-1), and the Special-Status Plant and Sensitive Vegetation Community Mitigation and Monitoring Plan (MM-VEG-CEQA-4). All lands identified for preservation would require the recordation of a conservation easement. The easement could be held by CDFW or an approved land management entity. All lands identified for preservation shall require approval from the appropriate Federal and/or State regulatory agency.

MM BIO-CEQA-4 Implementation

Responsible Party: The Applicant shall ensure that a designated qualified biologist (approved by the CPUC, BLM, and CDFW) conducts pre-construction surveys (i.e., delineation and mapping) for jurisdictional waters/wetlands and sensitive natural communities. The Applicant is responsible for the implementation of ESA exclusion fencing and mitigation from potential impacts of these features.

Timing: Pre-construction surveys to delineate jurisdictional aquatic resource features and/or map sensitive vegetation communities shall be completed prior to Project commencement and all required permits have been obtained. ESA exclusion fencing (at appropriate buffer distances) shall be implemented in the appropriate locations prior to Project activities. All temporary and permanent mitigation shall be approved by the appropriate Federal and/or State regulatory agencies prior to Project commencement.

Mitigation Monitoring and Reporting Program: A Preliminary Jurisdictional Wetlands/Waters Delineation Report shall be prepared and approved by the USACE and CDFW prior to Project commencement; all required regulatory permits must be obtained prior to the start of Project activities. All jurisdictional waters/wetlands and sensitive natural communities shall be identified (including measures for avoidance and mitigation), mapped, and included in the Vegetation Management Plan (MM VEG-CEQA-1). Specific mitigation and monitoring requisites for temporarily and/or permanently impacts jurisdictional waters/wetlands and/or sensitive natural communities shall also be documented in the Special-Status Plant and Sensitive Vegetation Community Mitigation and Monitoring Plan (MM-VEG-CEQA-4). Subsequent follow-up reporting measures are as defined in the Vegetation Management Plan (MM VEG-CEQA-1) and Special-

Status Plant and Sensitive Vegetation Community Mitigation and Monitoring Plan (MM-VEG-CEQA-4).

Standards for Success: No net loss of jurisdictional waters/wetlands and/or sensitive natural communities. Disturbance to all jurisdictional waters/wetlands and/or sensitive natural communities shall be minimized and avoided to the extent feasible. Temporary impacts shall be restored at a 1:1 ratio; permanent impacts to jurisdictional waters/wetlands shall be mitigated at a ratio that varies from 2:1 to 5:1 depending on the resource impacted and mitigation strategy used. All temporary and/or permanent impacts to jurisdictional waters/wetlands and/or sensitive natural communities shall be mitigated and approved by the appropriate Federal and State regulatory agencies.

MM VEG-CEQA-1: Develop and Implement a Vegetation Management Plan.

The following APMs, BMPs, and CMAs shall be incorporated within this MM VEG-CEQA-1: APM BIO-4; APM BIO-10; APM BIO-11; BMP BIO-11; APM BIO-12; APM BIO-13; APM BIO-14; APM BIO-15; BMP BIO-15; APM BIO-16; BMP BIO-37; BMP BIO-41; BMP BIO-41; BMP BIO-43; BMP BIO-51; BMP BIO-52; BMP BIO-53; BMP BIO-54; BMP BIO-55; BMP VEG-01; BMP VEG-02; CMA DFA-BIO-IFS-1; CMA DFA-BIO-IFS-2; CMA LUPA-BIO-1; CMA LUPA-BIO-3; CMA LUPA-BIO-4; CMA LUPA-BIO-7; CMA LUPA BIO-8; CMA LUPA-BIO-10; CMA LUPA-BIO-11; CMA LUPA-BIO-14; CMA LUPA-BIO-15; CMA LUPA-BIO-COMP-1; CMA LUPA-BIO-PLANT-1; CMA LUPA-BIO-PLANT-2; CMA LUPA-BIO-PLANT-3; CMA LUPA BIO-SVF-1; CMA LUP-BIO-VEG-1; CMA LUP-BIO-VEG-2; CMA LUP-BIO-VEG-3; CMA LUP-BIO-VEG-5; CMA LUP-BIO-VEG-6; CMA LUPA-SW-13; CMA LUPA-TRANS-BIO-4; and CMA DFS-VPL-BIO-FIRE-1.

Prior to the start of ground disturbance, the Applicant shall develop and implement a Vegetation Management Plan for the Project. The Vegetation Management Plan shall be approved by the BLM, CPUC, and CDFW prior to the start of any Project activities (i.e. mobilization). The purpose of the Vegetation Management Plan is to provide guidance and outline a Project-specific protocol to ensure that the Applicant restores all temporarily disturbed areas to pre-construction conditions, or better, and provide for habitat preservation, creation, and/or restoration resulting from permanent impacts to special-status species habitat, sensitive vegetation communities, and/or jurisdictional waters/wetlands.

The Vegetation Management Plan shall detail procedures to manage, monitor, mitigate, and restore native vegetation and habitat, as well as provide controls for noxious and invasive weed species. The Vegetation Management Plan shall incorporate the APMs, BMPs, and CMAs, by including the specifications detailed in the Habitat Restoration and Monitoring Plan, the Noxious Weed Management Plan/Invasive Species Management/Control Plan, and all other applicable vegetation management mitigation and monitoring plans associated with the Project.

The Vegetation Management Plan shall also reference and integrate protocols and requirements detailed in the most up-to-date State and Federal laws, policies and guidance regarding vegetation management including, but not limited to:

- *Integrated Vegetation Management Handbook (BLM 2008);*
- *Integrated Weed Management Plan (BLM 2015b);*
- *Memorandum of Understanding on Vegetation Management for Powerline Rights-of-Way (USDA 2006);*
- *New Diagrams and Applications for the Wire Zone-border Zone Approach to Vegetation Management on Electric Transmission Line ROWs (Ballard et al. 2007);*

- *Saguaro (Carnegiea gigantea, Cactaceae) Age-Height Relationships and Growth: The Development of a General Growth Curve (Drezner 2003);*
- *The Step-Pointe Method of Sampling- A Practical Tool in Range Research (Evans et al. 1957); and*
- *Transmission Vegetation Management, NERC Standard FAC-003-2 Technical Reference (NERC 2009-2011).*

The Vegetation Management Plan shall include, at a minimum, an overview of the following technical items:

- **Vegetation Management Goals and Objectives.** The goals of Project vegetation management shall be defined in the Project Vegetation Management Plan. At a minimum, Project vegetation management shall be consistent with the following objectives:
 - Vegetation management measures and BMPs pertaining to sensitive vegetation species and habitats, seeding, soils, restoration and revegetation, noxious and invasive weeds, equipment, schedule and implementation timing, success criteria, monitoring and reporting will be specifically outlined and be consistent with the aforementioned protocols and methodologies set forth by the appropriate State and Federal regulatory agencies;
 - Vegetation will be trimmed, cleared, or otherwise controlled, to minimize and reduce impacts to the extent practicable;
 - Avoidance and minimization shall be employed to ensure the reduction, introduction, and spread of noxious and invasive weed species;
 - The Project will restore, and revegetate affected areas;
 - Habitat enhancement and preservation shall be applied to the extent practical (e.g., promote appropriate levels of dead and downed woody debris to provide habitat and seed bed establishment); and
 - Mitigation and contingency measures will be employed on an as needed basis.
- **Plan Submittal and Approval Process.** A process for proposing Vegetation Management Plan modifications to the appropriate Federal and State regulatory agencies for review and approval shall be outlined.
- **Avoidance, Minimization, Restoration, and Mitigation Criteria.** Documentation shall include the avoidance, minimization, restoration, and mitigation criteria terms, stipulations, and general conditions required by the appropriate Federal and State regulatory agencies. All disturbed Project areas shall be restored and revegetated to the extent practicable, given the arid desert environment.
- **Pre-Construction Project Site Conditions.** Provide a description of the pre-Project conditions. Describe other site characteristics relevant to the management of vegetation (e.g., composition of plants, topography and drainage patterns, soil types, geomorphic and hydrologic processes important to the site or species, pre-construction anthropogenic factors, etc.). This shall also include ecological characteristics and factors (e.g., total population, reproduction, distribution, pollinators, etc.).
- **Methods.** Describe the methods that will be used (e.g., invasive exotics control, site protection, seedling protection, propagation techniques, crush and drive-cut-mow removal techniques, etc.) and the long-term maintenance required.
- **Discussion.** The Vegetation Management Plan will include a discussion section that, at a minimum, considers specifications for habitat preservation and enhancement, adaptive management, use of conservation easements (e.g., Desert Wildlife Management Area, Wildlife Habitat Management Area),

and other land use protections and restrictions applicable to the management of vegetation within the Project area.

- **Schedule.** A proposed schedule for all vegetation management, including vegetation pre- and post-construction surveys, monitoring, mitigation, restoration, and Project construction activities. The following is recommended as part of the Vegetation Management Plan schedule:
 - Species-specific seasonal restriction dates will be outlined in the Vegetation Management Plan and observed during implementation. At a minimum, this shall incorporate timeframes for breeding and nesting birds, lambing, fawning, or roosting of species, bloom periods for special-status species, and periods of highest precipitation and rainfall (i.e., to maximize irrigation requisites and implement erosion controls).
 - The Project area should be broken up into sections based on the required construction activities;
 - When applicable, restoration or habitat enhancement activities shall be implemented once construction activities are complete within a specific area; and
 - Restoration and/or creation of habitat should occur within an appropriate window for each specific community and species makeup (i.e., impacts to habitat during the summer months may not be initiated until the fall to promote native seed germination).
- **Pre-Construction Survey.** Pre-construction vegetation surveys will consist of up to three survey events, to capture the annual species only present at specific times of the year, to document the presence of special-status species, to identify and map the locations and extent of sensitive vegetation communities, and a general vegetation inventory survey for all vegetation species, including invasive and noxious weeds. Measures for conducting and completing floristic surveys to support the Vegetation Management Plan are specified in MM VEG-CEQA-2—Conduct Pre-Construction Floristic Surveys.
- **Post-Construction Surveys, Monitoring, and Reporting.** The Applicant shall appoint a qualified biologist to complete post-construction surveys. Monitoring surveys shall be conducted within following vegetation management activities within the Project area (e.g., restoration, re-contouring, etc.). Areas subject to vegetation management shall be monitored to assess progress and to make recommendations for successful revegetation, habitat enhancement, etc. Monitoring surveys shall be performed by a qualified biologist knowledgeable in the area of vegetation management and restoration specific to the Project vegetation communities and jurisdictional waters/wetlands.
- **Monitoring**
 - **Qualitative Monitoring:** Qualitative monitoring surveys shall be performed monthly in all vegetation management areas for the one year following the completion of Project activities and subsequent vegetation management implementation. Qualitative monitoring shall be on a quarterly schedule thereafter, until final completion and approval by the appropriate Federal and State regulatory agencies. Qualitative monitoring shall assess native plant species performance, including growth and survivorship, germination success, reproduction, plant fitness and health, and pest or invasive plant problems. Monitoring at this stage shall indicate need for remediation or maintenance work well in advance of final success/failure determination. Post-Construction Vegetation Management Quarterly Monitoring Progress Reports shall be prepared for the first year of monitoring and are further described below.
 - **Quantitative Monitoring:** Quantitative monitoring shall occur annually for year one through five, or for additional years until the success criteria are met. Within each vegetation management area, the qualified biologist shall collect data in a series of 1 m² quadrats to estimate absolute and relative cover and density of each plant species. In year 2 or 3, depending on the growth

within the vegetation management, the qualitative monitoring methods may deviate from the quadrat methodology to toe-point transects (Evans et. al. 1957). Data shall be used to measure native species growth performance, to estimate native and non-native species coverage, seed mix germination, native species recruitment and reproduction, and species diversity. Based on these results, the designated biologist shall make recommendations for maintenance, adaptive management, or remedial work efforts that may be needed to meet success criteria for the Project area vegetation management requisites.

- **Reporting**

- Quarterly Reporting: For the first year, a Post-Construction Vegetation Management Quarterly Monitoring Progress Report shall be compiled by the Applicant detailing the post-construction results for areas where vegetation management has occurred within the Project area. The Post-Construction Vegetation Management Quarterly Monitoring Progress Reports shall include results for monthly qualitative monitoring; specifically, summarizing site status and recommended remedial measures. Each Post-Construction Vegetation Management Quarterly Monitoring Progress Report shall list estimated species coverage and diversity, species health and overall vigor, the establishment of volunteer native species, topographical/soils conditions, problem weed species, the use of the site by wildlife, significant drought stress, and any recommended remedial and/or adaptive management measures deemed necessary to ensure compliance with specified vegetation management success criteria.
- Annual Reporting: Every year, for years one through five, the results of annual quantitative monitoring shall be compiled into an Annual Post-Construction Vegetation Management Report by the Applicant. Each annual report shall list plant species coverage and diversity measured during yearly quantitative surveys, compliance/non-compliance with required vegetation management success criteria, species health and overall vigor, the establishment of volunteer native species, hydrological and topographical conditions, use of the site by wildlife, and the presence of invasive weed species. In the event of where the required vegetation management success criteria are not fulfilled, the Annual Post-Construction Vegetation Management Report shall include remedial and/or adaptive management measures to ensure future success (CPUC 2016). These annual reports shall be forwarded by the qualified biologist to the appropriate State and Federal regulatory agencies (e.g., CPUC, BLM, and CDFW) at the end of each year following implementation of the Vegetation Management Plan, until the established success criteria have been met. Each Post-Construction Vegetation Management Annual Report shall include, at the minimum:
 - The name, title, and company of all persons involved in restoration monitoring and report preparation;
 - Maps or aerials showing vegetation management (i.e., restoration and invasive weed management areas), transect locations, and photos documentation with locations;
 - An explanation of the methods used to perform vegetation management, including, but not limited to, the number of acres for restoration and/or areas treated for removal of non-native plants; and
 - An assessment of the treatment success.

- **Planting Methodology and Palette.** Revegetation plantings shall be implemented in all areas impacted by Project activities. A description of the preferred methods for seeding shall be provided within the Vegetation Management Plan (e.g., hydroseeding, drill seeding, broadcast seeding, etc.).

Additionally, a discussion on proposed timing of seeding, type and duration of irrigation system proposed (if needed), and erosion controls for revegetation activities, shall be included.

Several different plant palettes shall be developed depending on the vegetation communities proposed to be restored. The plant palettes shall include an appropriate native seed mix representative of the current species composition in the Project area.

Seed should be sourced from genetic stock appropriate to the Project vicinity. In addition, all plant materials used in Project revegetation shall be consistent with the maintenance of natural ecosystem processes. Supply of seed material and container plants will be purchased by the Contractor. If commercial seed mixes are purchased, they shall be native and free of noxious weeds. If seed from genetic stock appropriate to the Project vicinity is not available, seeds can be collected within the Project vicinity with the appropriate permits and tags for native plant collection. The source of available seed must be approved by the BLM and CPUC prior to use in any species palates. Seeding and revegetation shall begin after construction has and will occur within 30 days post-construction. Supply of seed material and container plants will be purchased by the Contractor(s).

- **Noxious Weed and Invasive Species Management.** The Vegetation Management Plan will identify noxious and invasive weed species to be addressed in the Project area, describe measures to conduct pre-construction weed surveys, reduce the potential introduction or spread of noxious weeds and invasive species during construction, and monitor and control weeds during operation of the transmission line. Specifically, an inventory of invasive and noxious weeds shall be compiled following pre-construction floristic surveys and disposed of at an appropriate off-site location (MM VEG-CEQA-2). If weeds are detected in the Project area following removal, then remedial actions shall be employed to eradicate noxious or invasive weed species and to prevent their subsequent spread.

All equipment, tools, and tires shall be properly cleaned and decontaminated of noxious weeds before entering the Project region. Prior to construction activities (i.e., including clearing, grubbing, etc.), a Weed Decontamination Form will be submitted to the Project Designated Biologist. The Weed Decontamination Form shall verify that construction related equipment used by the contractor(s), has been cleaned and deemed weed free, before entering the Project region. Vehicle and equipment wash, and inspection stations will be utilized minimize the introduction of invasive weeds or subsidy of invasive weeds.

Weed removal activities such as noxious/ invasive weed removal, and other varied management practices, are recommended before (e.g., top soil weed removal) and after construction.

When installing sediment barriers, the use of certified weed-free mulch, straw, hay bales, or equivalent fabricated materials shall be prescribed.

The use of pesticides and/or herbicides is restricted in areas associated with waterways, wetlands, or areas that could impact water quality. Weed removal in jurisdictional areas adjacent to streams or wetlands shall be done using hands tools. Application of pesticides and/ or herbicides must be approved by the Project Designated Biologist, the appropriate local, State, and Federal regulatory agencies.

- **Soils and Contouring.** Native soils will be salvaged to the extent feasible. Specifically, soil horizons will be separated for the spoils, stored during construction, and returned to their native sites to ensure revegetation and restoration success. Restoring and preserving vegetation, as well as soil, will support and maintain native vegetation communities, associated carbon sequestration and nutrient cycling processes, and habitat for wildlife species. Erosion control measures will be implemented during all Project ground disturbance, including vegetation management activities. Recontouring of areas that were altered from their original contour or gradient is required.

- **Treatment of Succulents.** Measures would be implemented to minimize the number of succulents (e.g., saguaro cacti) that must be relocated for the safe construction and operation of the transmission line. The Vegetation Management Plan shall detail requirements and methods for the salvage, storage, and replanting of succulent species. Saguaro cacti that are within 50-feet of the outermost conductors and could be tall enough to pose a hazard would be removed if they cannot be avoided through Project design. When possible, succulent species that must be removed would be relocated as directed by the appropriate State and Federal agencies (i.e., the BLM). Monitoring and management would be detailed in the Vegetation Management Plan.
- **Success Criteria.** A description of the success criteria and methods for achieving success of vegetation management, specifically restoration/revegetation efforts, and supplemental activities to be conducted. Success criteria in the Vegetation Management Plan shall address include the following components:
 - Compliance Success: evaluates compliance with Project scope, permits, contracts, etc.
 - Functional Success: evaluates habitat integrity and determines if restoration of the designated ecosystem(s) has been successful.
 - Landscape Success: measures functional success and how restoration, management, maintenance, and monitoring of Project vegetation has contributed to the ecological integrity of overall landscape and has further maintained and/or enhanced biodiversity. Success will be based on the establishment of seeded and planted species and the exclusion of exotic and ruderal species as compared to reference or neighboring sites.
- **Figures.** The Vegetation Management Plan shall include detailed figures indicating the locations and vegetation types of areas proposed for management (i.e., areas of temporary or permanent disturbance, mitigation areas, etc.).
 - The location of special-status plant species shall be consistent with the floristic inventory conducted as part of MM VEG-CEQA-2. Specifically, these figures shall meet the specific BLM Guidelines for mapping of succulent species (e.g., cacti, yuccas, etc.);
 - Mapped habitats for other species shall be consistent with the survey requirements;
 - Avoidance setbacks for sensitive vegetation species and habitats shall be delineated on the Vegetation Management Plan figures. Setbacks shall be consistent with appropriate distances outlined in the APM, BMP, and CMA measures, as well as those defined by State and Federal requisites for the Project; and
 - Vegetation Management Plan figures shall be updated, as necessary, to reflect current site conditions should they change.
- **Supplemental References.** In addition to the incorporation of the most-up-to-date State and Federal protocols, policies and guidance pertaining to vegetation management, the following Project-specific plans shall be referenced and/or included as supplemental attachments to the Vegetation Management Plan.
 - Erosion Control Plan (ECP)/ Erosion, Dust Control, and Air Quality Plan;
 - Fire Prevention Plan (FPP);
 - Project grading plans;
 - SPCC; and

SWPPP

MM VEG-CEQA-1 Implementation

Responsible Party: The Applicant shall ensure that a qualified biologist (approved by the CPUC, BLM, and CDFW) familiar with special-status species, sensitive vegetation communities, noxious and invasive vegetation species, and jurisdictional waters/wetlands present in the Project region, is appointed to oversee vegetation management activities.

Timing: Vegetation management shall be conducted, as needed, within the Project area prior to construction, during construction, and following the completion of Project activities; special attention will be paid to avoid nesting/breeding seasons for special-status wildlife and blooming periods for status plants where practicable.

Mitigation Monitoring and Report Program: Prior to Project commencement, pre-construction vegetation surveys shall be conducted by an Applicant designated qualified biologist. A Vegetation Management Plan shall be prepared by the Applicant and approved by the appropriate Federal and State regulatory agencies prior to Project commencement. Following Project completion, the Applicant shall ensure post-construction vegetation management surveys are completed quarterly and annually. Post-Construction Vegetation Management Quarterly Monitoring Reports, and Post-Construction Vegetation Management Annual Monitoring Reports shall be prepared by the Applicant and submitted to the appropriate Federal and State regulatory agencies.

Standards for Success: Restore temporarily disturbed areas to pre-construction conditions, or better, and provide for habitat preservation/creation/restoration resulting from permanent impacts to sensitive vegetation species, sensitive vegetation communities, and jurisdictional waters/wetlands. Reduce the spread and introduction of noxious and invasive vegetation species. Ensure all Project vegetation management success criteria are met. Remedial and/or adaptive management measures shall be implemented to meet vegetation management success criteria for the Project, as needed.

MM VEG-CEQA-4: Compensation for Impacts to Special-Status Plant Species and Sensitive Communities.

The following APMs, BMPs, and CMAs shall be incorporated within this MM VEG-CEQA-4: APM BIO-2; BMP BIO-2; APM BIO-4; APM BIO-11; BMP BIO-11; APM BIO-13; APM BIO-14; APM BIO-15; BMP BIO-15; APM BIO-16; BMP BIO-24; BMP BIO-25; BMP BIO-31; BMP BIO-37; BMP BIO-41; BMP BIO-43; BMP BIO-52; BMP BIO-53; BMP BIO-55; BMP VEG-01; BMP VEG-02; CMA DFA-BIO-IFS-1; CMA DFA-BIO-IFS-2; CMA DFA-VPL-BIO-DUNE-1; CMA LUPA-BIO-1; CMA LUPA-BIO-2; CMA LUPA-BIO-3; CMA LUPA-BIO-4; CMA LUPA-BIO-7; CMA LUPA-BIO-9; CMA LUPA-BIO-13; CMA LUPA-BIO-14; CMA LUPA-BIO-DUNE-1; CMA LUPA-BIO-DUNE-3; CMA LUPA-BIO-DUNE-5; CMA LUPA-BIO-PLANT-2A; CMA LUPA-BIO-8; CMA LUPA-BIO-COMP-1; CMA LUPA-BIO-PLANT-1; CMA LUPA-BIO-PLANT-2; CMA LUPA-BIO-PLANT-3; CMA LUPA-BIO-RIPWET-1; CMA LUPA RIPWET-3; CMA LUPA-BIO-SVF-1; CMA LUPA-BIO-SVF-6; CMA LUPA-SW-13; and CMA LUPA-SW-16.

If special-status plant species are identified during pre-construction floristic surveys (MM VEG-CEQA-2 and MM VEG-CEQA-3), and there is the potential for impacts, then the Applicant shall implement the measures listed below. Mitigation shall be accordance with Federal and State agencies requisites, as well as with the *Policy on Mitigation Guidelines Regarding Impacts to Rare, Threatened, and Endangered Plants* (CNPS 1998), and developed and approved by the appropriate Federal and State regulatory agencies. Mitigation for impacts to special-status plant species shall consider and overlap with compensation for special-status wildlife, sensitive vegetation communities, and jurisdictional waters and wetlands.

- **Documentation:** The Applicant shall develop and implement a Special-Status Plant and Sensitive Vegetation Community Mitigation and Monitoring Plan. The Special-Status Plant and Sensitive Vegetation Community Mitigation and Monitoring Plan shall summarize the results of the pre-construction floristic surveys and describe any conditions that may have prevented target species from being located or identified, even if they are present as dormant seed or below-ground rootstock (e.g., poor rainfall, recent grazing, or wildfire). The plan will include management considerations for Harwood's eriastrum and serve as the Harwood's Eriastrum Linear ROW Protection Plan, as described by BMP BIO-31 and referenced by MM BIO-CEQA-1. In some cases, follow-up surveys may be necessary to adequately evaluate impacts, and will be incorporated into the Special-Status Plant and Sensitive Vegetation Community Mitigation and Monitoring Plan for implementation.

The Special-Status Plant and Sensitive Vegetation Community Mitigation and Monitoring Plan shall at a minimum include:

- Species and locations (i.e., figures) of plants identified for salvage;
 - Criteria for determining whether an individual plant is appropriate for salvage;
 - The appropriate season for salvage;
 - Equipment and methods for collection, transport, and re-planting plants or seed banks, to retain intact soil conditions and maximize success;
 - Planting methodology for off-site introduction mitigation methods;
 - For shrubs, cacti, and yucca, a requirement to mark each plant to identify the north-facing side prior to transport, and replant it in the same orientation;
 - Details regarding storage of plants or seed banks for each species;
 - Location of the proposed recipient site, and detailed site preparation and plant introduction techniques for top soil storage, as applicable;
 - A description of the irrigation, weed control, and other maintenance activities;
 - Success criteria, including specific timeframe for survivor-ship and reproduction of each species;
 - A schedule for all mitigation activities; and
 - A detailed monitoring program, commensurate with the goals detailed in the Vegetation Management Plan (MM VEG-CEQA-1).
- **Onsite Avoidance and Minimization:** Minimizing impacts by limiting the degree or magnitude of the action, and avoidance of special-status plant species is the preferred strategy, wherever feasible.

Specifically, Project work areas shall be located to avoid or minimize impacts to special-status plants. Effective avoidance through Project design shall include a buffer area surrounding each avoided occurrence, where no Project activities will take place. The buffer area will be clearly staked, flagged, and signed for ESA avoidance prior to the beginning of ground-disturbing activities, and maintained throughout the active construction phase(s). The buffer zone shall be of sufficient size to prevent direct or indirect disturbance to the plants from construction activities, erosion, inundation, or dust. The size of the buffer will depend upon the proposed use of the immediately adjacent lands and the plant's ecological requirements to be specified by the designated qualified biologist/botanist. At a minimum, the buffer for trees or shrubs species shall be equal to twice the drip line (i.e., two times the distance from the trunk to the canopy edge) to protect and preserve the root systems. The buffer for herbaceous species shall be a minimum of 50 feet from the perimeter of the occupied habitat or the individual. If a

smaller buffer is necessary due to other Project constraints, then the Applicant shall develop and implement site-specific monitoring and put other measures in place to avoid species impacts.

- **Onsite Compensation:** Compensation for unavoidable temporary impacts to special-status plant species shall include on-site habitat restoration with similar species compositions to those present prior to construction at a ratio of 1:1. Restoration measures shall be documented in the Vegetation Management Plan (MM-VEG-CEQA-1), as well as the Special-Status Plant and Sensitive Vegetation Community Mitigation and Monitoring Plan.
- **Off-Site Compensation.** It was assumed that Project-related impacts would result in the loss of more than 10 percent of the on-site population of any special-status plant species with a CRPR of 1 or 2. Compensation for permanent impacts to special-status plant species based on the results of the floristic surveys shall include off-site creation, enhancement, and/or preservation or participation in an established mitigation bank program at a minimum 3:1 replacement ratio. The Applicant shall coordinate with CPUC, BLM, and CDFW to determine the appropriate mitigation strategy and final replacement ratios and acreages. All mitigation shall be approved by the appropriate Federal and State regulatory agencies prior to Project activities.

The Applicant shall restore all temporary impacts to sensitive vegetation communities (e.g., blue Palo Verde-ironwood woodland, mesquite thickets, bush seepweed scrub, etc.) and special-status species habitat at a minimum ratio of 1:1, as detailed in the Vegetation Management Plan (MM-VEG-CEQA-1) and the Special-Status Plant and Sensitive Vegetation Community Mitigation and Monitoring Plan (MM-VEG-CEQA4).

To compensate for permanent impacts to sensitive vegetation communities and special-status species habitat, the Applicant shall provide the creation and/or restoration of habitat at the following ratios:

- Permanent impacts to sensitive vegetation communities, (e.g., riparian desert woodland habitats, blue Palo Verde-ironwood woodland, mesquite thickets, etc.) shall be mitigated at a ratio of 5:1;
- Permanent impacts to other sensitive vegetation communities shall also be mitigated at a ratio of 5:1; and
- Permanent impacts to jurisdictional waters/wetlands shall be mitigated at a minimum ratio of 2:1, or as otherwise specified by the appropriate Federal and State regulatory agencies.

Off-site compensation lands and/or established mitigation bank program will be identified, if available, in coordination with the appropriate Federal and State regulatory agencies. Off-site compensation lands will consist of habitat occupied by the impacted special-status plants at the appropriate ratio of acreage and the number of plants for any occupied habitat affected by the Project. Occupied habitat will be calculated on the Project site and on the compensation lands as including each special-status plant occurrence. Off-site compensation shall be documented in the Project-specific Special-Status Plant and Sensitive Vegetation Community Mitigation and Monitoring Plan and approved in consultation with the appropriated Federal and State regulatory agencies.

The Applicant shall provide for open space/conservation easements on all acquired lands or provide the required funds for the acquisition of easements to a "qualified easement holder"; the CDFW is a qualified easement holder. To qualify as a "qualified easement holder" a private land trust must have substantial experience managing open space/conservation easements that are created to meet mitigation requirements for impacts to special-status species, have adopted the Land Trust Alliance's Standards and Practices, and have a stewardship endowment fund to pay for its perpetual stewardship obligations. The Applicant shall also provide the "qualified easement holder" with adequate funds to cover administrative costs incurred during the creation of the easement, funds in the form of a non-

wasting endowment to cover the cost of monitoring and enforcing the terms of the easement in perpetuity.

For special-status plant restoration or enhancement activities, several techniques can be applied including:

- **Salvage.** The Applicant shall consult with the designated qualified biologist/botanist, as well as the appropriate Federal and State regulatory agencies, regarding the feasibility and likely success of salvage efforts for each special-status plant species. If salvage is deemed to be feasible, then Applicant shall incorporate salvage measures into the Project-specific Special-Status Plant and Sensitive Vegetation Community Mitigation and Monitoring Plan, which shall be approved by the appropriate Federal and State regulatory agencies prior to implementation.
- **Propagation and Off-Site Introduction.** If salvage and relocation is not believed to be feasible for special-status plants, then Applicant shall consult with appropriate Federal and State agencies, as well as other qualified entities if needed, to develop an appropriate experimental propagation and relocation strategy, based on the life history of the species affected. The strategy will include at minimum: (a) a planting methodology including strategies for species specific collection and salvage measures for plant materials (e.g., cuttings), seed, or seed banks, to maximize success likelihood; (b) details regarding storage of plant, plant materials, or seed banks; (c) location of the proposed propagation facility, and proposed methods; (d) time of year that the salvage and other planting or transplantation practices will occur; (e) irrigation; (f) erosion controls; (g) success criteria; and (h) a detailed monitoring program. All propagation and off-site introductions strategies shall be documented in the Special-Status Plant and Sensitive Vegetation Community Mitigation and Monitoring Plan for the Project.
- **Restoration:** Restoration can be used to mitigate impacts and depending upon the degree of impact, habitat restoration may be as simple as removing debris and controlling public access. In more complex situations, however, partial or total restoration of degraded habitat may require extensive revegetation, and soil protection and stabilization programs. The strategy will include at a minimum: (a) BLM approved genetically and ecologically appropriate native plant materials suitable for the site; (b) a description of any required topsoil salvage, plant salvage, seeding techniques, and methods to stabilize and shape soil surface to reduce soil erosivity; (c) monitoring and reporting protocols; and (d) success criteria. Restoration must be tailored to the specific project site based on the habitat and species involved (CNPS 1998).
- **Monitoring and Maintenance:** All mitigation for special-status plant species shall be monitored to assess progress and to make recommendations for successful establishment. Monitoring shall be performed by qualified biologist/botanist that the Applicant has designated. At a minimum, Monitoring shall include qualitative and quantitative methods as described in MM VEG-CEQA-1 for the Vegetation Management Plan and MM VEG-CEQA-4 Special-Status Plant and Sensitive Vegetation Community Mitigation and Monitoring Plan. Monitoring shall identify the need for remediation or maintenance work well in advance of final success/failure determination. Monitoring and maintenance progress toward achieving success criteria, conditions, and all observations pertinent to eventual success shall be documented in the Post-Construction Vegetation Management Quarterly Monitoring Progress Reports, and the Annual Post-Construction Vegetation Management Report, as described in the Vegetation Management Plan measure (MM-VEG-CEQA-1). In addition to the Vegetation Management Plan annual and quarterly reporting specifications, reporting for mitigation monitoring and maintenances shall also include Progress reports shall include: (a) estimated species survival; (b) species health and overall vigor; (c) the establishment of volunteer native species; (d) topographical/soils conditions; (e) problem weed species; (f) the use of the site by wildlife; (g) significant drought stress; and (h) recommended remedial measures deemed necessary to ensure compliance with specified success

criteria. If Federally and/or State listed plant species are identified within project disturbance areas, then consultation with the appropriate resource agencies will be required to develop acceptable mitigation prior to construction, which may include additional measures. Conservation measures to protect or restore listed special-status plant species, or their habitat, may be required by the appropriate Federal and State regulatory agencies before impacts are authorized.

MM VEG-CEQA-4 Implementation

Responsible Party: Supervision, guidance, and verification of compensation for impacts to special-status plants and sensitive vegetation communities, as outlined in this measure, shall be achieved by the Applicant.

Timing: Prior to construction, if special-status plant species or sensitive vegetation communities will be impacted by the Project, then the Applicant shall develop and implement mitigation, with the approval by the appropriate Federal and State regulatory agencies.

Monitoring and Reporting Program: The Applicant shall develop and implement a Special-Status Plant and Sensitive Vegetation Community Mitigation and Monitoring Plan.

Standards for Success: No net loss of special-status plant species, and/or habitat, or sensitive vegetation communities. If special-status plant species or sensitive vegetation communities are determined present in the Project area during pre-construction floristic surveys, and impacts are unavoidable, then consultation with the appropriate Federal and State agencies will be completed. Establishment of a new viable occurrence, equal or greater in extent and numbers, to the affected occurrence of special-status plant species shall be met.

MM WIL-CEQA-1: Develop and Implement an Avian Management and Protection Plan (APP) and Bird and Bat Conservation Strategy (BBCS).

The following APMs, BMPs, and CMAs shall be incorporated within this MM WIL CEQA-1: BMP BIO-19, APM BIO-20, APM BIO-21, BMP BIO-21, BMP BIO-29, BMP BIO-30, BMP BIO-33, BMP BIO-40, BMP BIO-45, BMP BIO-48, CMA LUPA-BIO-14, CMA LUPA-BIO-16, CMA LUPA-BIO-17, CMA LUPA-BIO-COMP-2, CMA LUPA-BIO-IFS-11, CMA LUPA-BIO-IFS-12, CMA LUPA-BIO-BAT-1, CMA LUPA-BIO-COM-2, CMA LUPA-BIO-DUNE-5, CMA LUPA-BIO-IFS-13, CMA LUPA-BIO-IFS-14, CMA LUPA-BIO-IFS-24, CMA LUPA-BIO-IFS-25, CMA LUPA-BIO-IFS-26, CMA LUPA-BIO-IFS-27, CMA LUPA-TRANS-BIO-1, CMA LUPA-TRANS-BIO-2, and CMA LUPA-TRANS-BIO-3.

The Project Applicant shall prepare an Avian Protection Plan (APP) and Bird and Bat Conservation Strategy (BBCS), which will also include a component for a Nesting Bird and Nest Management Plan (NBNMP), as identified in the BBCS in BMP BIO-29, in coordination with and approval by the applicable permitting/resource agencies (i.e., BLM, CDFW, USFWS, CPUC) prior to the start of construction. Additionally, the components of the Burrowing Owl Avoidance, Minimization, and Mitigation Plan (MM WIL-CEQA-3) and the Bat Management and protection Plan (MM WIL-CEQA-4) will also be included under the overarching APP/BBCS Plan. The specifics of the APP and BBCS will include the following:

- **APP:** The APP will follow the APLIC/USFWS 2005 APP Guidelines which specifies program design for transmission projects in order to reduce operational avian risks that result from interactions with transmission lines. This goal of this guidance is to reduce avian mortality from electrocution and collision with the transmission lines. The APP Guidelines state that although each APP developed for a specific project may be different, the overall goal of reducing avian mortality is the same across all developed

APPs. The APP developed for the Project shall include, at a minimum, the following consideration and evaluation of principals identified in the APP Guidance:

1. **Corporate policy:** Confirming the company's commitment to work cooperatively towards the protection of migratory birds;
 2. **Training:** All appropriate utility personnel, including managers, supervisors, line crews, engineers, etc. shall be properly trained in avian issues (which shall be enforced through MM BIO-CEQA-2, Implement a Worker Environmental Awareness Program);
 3. **Permit Compliance:** Identify the process in which the Applicant will obtain and comply with all necessary permits related to avian issues;
 4. **Construction Design Standards:** Avian interactions shall be considered in the design and installation of the transmission line as well as during operations and maintenance of the facility. Construction configurations from the *Suggested Practices for Raptor on Power Lines; The State of the Art in 1996* and *Mitigating Bird Collisions with power Lines: The State of the Art in 1994*, or the most current editions of these documents shall be consulted during the design phase of the Project to ensure new construction is avian-safe;
 5. **Nest Management:** Procedures for nest management on the transmission lines shall be explained to employees during training to ensure uniform treatment of avian nest issues among personnel;
 6. **Avian Reporting System:** Development of a reporting system which shall include reporting of any avian mortalities, as required by any federal or State permits. The reporting system can also help pinpoint areas of concerns by tracking both the specific locations where mortalities may be occurring, as well as the extent of such mortalities;
 7. **Risk Assessment Methodology:** A focus on the areas with the highest risk to migratory birds shall be the focus of the APP and therefore, a method for evaluating the risks posed to migratory birds in a manner that identified areas and issues of particular concern shall be developed;
 8. **Mortality Reduction Measures:** After completing the risk assessment, the efforts for avian protection shall be focused on areas of concern. A mortality reduction plan may need to be implemented depending on the results of the risk assessment. This approach could be implemented through direction of where monitoring should occur, where retrofits should be focused, and where new construction warrants special attention to raptor and other bird issues.
 9. **Avian Enhancement Options:** In addition to taking steps to reduce mortality risk to avian species, the developed APP also may include opportunities to enhance avian populations or habitat, including developing nest platforms, managing habitats to benefit migratory birds, or working cooperatively with agencies or organizations in such efforts;
 10. **Quality Control:** The developed APP may also include a mechanism to review existing practices, ensuring quality control;
 11. **Public Awareness:** The developed APP shall include a method to educate the public about the avian electrocution issues, the developed APP, as well as its success in avian protection.
 12. **Key Resources:** The developed APP shall identify key resources to address avian protection issues including, for example, a list of experts who may be called upon to aid in resolving avian issues.
- **BBCS:** The purpose of the BBCS is to outline measures/methods to minimize potential Project effects to nesting birds and avoid unauthorized take; the NBBMP (developed as a part of the BBCS) shall be approved by the above noted agencies prior to the site disturbance or pre-construction activities and be implemented by the Applicant throughout construction activities. Additionally, the current Avian Power Line Interaction Committee (APLIC) guidelines shall be incorporated into the NBBMP, which includes protections for nocturnal migrants (i.e., lighting controls) and species along the Colorado River

and near agricultural fields (APLIC 2006, 2012) (See BMP BIO-33). Specifically, these guidelines will be used to minimize the potential for attracting birds and bats to the proposed infrastructure (transmission lines and facilities). Any nighttime lighting associated with construction will be temporary and shielded in order to provide safe working conditions while limiting light spillover outside of the construction area. Implementation of APM AES-15 will also ensure that lighting will be directed in a downward position. Pre-construction surveys shall be completed in accordance with MM WIL-CEQA-6 below and if breeding birds with active nests are found prior to or during construction, a qualified avian biologist shall establish a minimum 300-foot buffer (500 foot for raptors) around the nest and no activities shall be allowed within the buffer(s) until the young have fledged from the nest or the nest fails (CPUC 2016). The prescribed buffers may be adjusted by a qualified avian biologist based on existing conditions around the nest, planned construction activities, tolerance of the species, and other pertinent factors. Buffer reductions for listed or special-status species may require coordination with the USFWS and/or CDFW. The qualified avian biologist shall conduct regular monitoring of the nest to determine success/failure and to ensure that Project activities are not conducted within the buffer(s) until the nesting cycle is complete or the nest fails. An avian biologist shall be responsible for documenting the results of the surveys (MM WIL-CEQA-6 below), nest buffers implemented, and the results of ongoing monitoring and shall provide a copy of the monitoring reports for impact areas to the appropriate resource agencies (i.e., USFWS and CDFW) (CPUC 2016).

If trees with nests are to be removed as part of Project construction activities, they shall be done so outside of the nesting season to avoid additional impacts to nesting raptors. If removal during the nesting season cannot be avoided all trees shall be inspected for active nests by the avian biologist. If nests are found within these trees, and contain eggs or young, no activities within a 300-foot buffer for nesting birds and/or a 500-foot buffer for raptors shall occur until the young have fledged the nest (CPUC 2016). At a minimum, the NBBMP shall include the following:

- Definitions of standard nest buffers for each species or group of species, depending on characteristics and conservation status for each species.
- A notification procedure for buffer distance reductions should they become necessary under special circumstances.
- A monitoring protocol including qualifications of monitors, monitoring schedule, and field methods, to ensure that any Project-related effects to nesting birds shall be minimized.
- A protocol for documenting and reporting any inadvertent contact or effects to birds or nests.
- A summary of applicable State and Federal laws and regulations, including definition of what constitutes a nest or active nest under State and Federal law.
- A list of bird species potentially nesting on or near the Project area, indicating approximate nesting seasons, nesting habitat, typical nest locations (e.g., ground, vegetation, structures, etc.), tolerance to disturbance (if known) and any conservation status for each species.
- A discussion of how construction of the Project has been scheduled, to avoid or minimize project impacts to nesting birds. Activities that may adversely affect breeding birds shall be scheduled outside the nesting season, as feasible.
- Discussion on nest buffer modification or reduction guidelines, including reporting procedures to the appropriate agencies (i.e., CDFW, USFWS, and CPUC).
- Discussion on use of nest deterrents and communication protocols for on-site monitors.
- Monitoring and reporting requirements.

- Detailed noise monitoring guidelines for active breeding territories and/or nests for special-status species that may occur within 500-feet of the Project area.
- Procedures for the calculation of a fee, to be reassessed every five years, to fund compensatory mitigation for bird and bat mortality impacts; this shall be based on requirements described in CMA LUPA-BIO-COMP-2.

MM WILCEQA-1 Implementation

Responsible Party: The APP/BBCS shall be developed and implemented by the Applicant and approved by the BLM, CDFW, USFWS, CPUC.

Timing: The APP/BBCS shall be prepared/approved prior to the start of construction activities and shall be implemented throughout the duration of construction. The APP specifically shall be implemented throughout the life of the Project while the BBCS shall focus on the construction and maintenance of the Project.

Mitigation Monitoring and Reporting Program: The Applicant shall retain a qualified avian biologist (approved by the CPUC) to perform monitoring surveys within 500-feet of the Project area. The qualified avian biologist shall report any inadvertent contact or effects to birds or nests within the Project area to the BLM, CDFW, USFWS, and CPUC. The Applicant shall develop a monthly report documenting compliance with this measure and any actions taken regarding the NBBMP. This report shall be made available to the BLM, CDFW, USFWS, and the CPUC. The monitoring requirements for the APP shall conform to the APLIC Guidance including identifying and responding promptly to any avian mortality and including adaptive management for avian issues related to the Project.

Standards for Success: Adverse effects to birds shall be avoided or minimized to less than significant levels.

MM WIL-CEQA-2: Develop and Implement a Raven Management Plan.

The following BMPs, and CMAs shall be incorporated within this MM WIL-CEQA-2: BMP BIO-28, CMA LUPA-BIO-6, and CMA-LUPA-TRANS-BIO-1.

A Raven Management Plan shall be submitted to the BLM, CDFW, and County for approval prior to the start of ground disturbance and issuance of a County grading permit. The Raven Management Plan shall address Project characteristics and activities that may attract or subsidize common ravens. The Raven Management Plan shall include measures designed to: 1) minimize attracting and subsidizing ravens, 2) provide education to Project personnel (MM-BIO-CEQA-2) 3) remove raven nests and offending ravens, and 4) implement adaptive management. The Applicant shall also provide funding for implementation of the USFWS Regional Raven Management Program, as described below.

The Raven Management Plan shall:

- Identify conditions associated with the Project that might provide raven subsidies or attractants;
- Describe management practices to avoid or minimize conditions that might increase raven numbers and predatory activities;
- Describe control practices for ravens;
- Establish thresholds that would trigger implementation of control practices; and
- Address monitoring and nest removal during construction and for the life of the Project.

The Applicant shall submit payment into an account established for the Project held by the National Fish and Wildlife Foundation (NFWF) to support the USFWS Regional Raven Management Program. The one-time fee shall be as described in the cost allocation methodology or more current guidance as provided by USFWS. The contribution to the regional raven management plan will be \$105 per acre impacted.

MM WIL-CEQA-2 Implementation

Responsible Party: The Raven Management Plan shall be developed and implemented by the Applicant and approved by the CPUC, BLM, and CDFW.

Timing: The Raven Management Plan shall be prepared prior to the start of construction activities and shall be implemented throughout the duration of construction.

Mitigation Monitoring and Reporting Program: The Applicant shall develop a monthly report documenting compliance with this measure and any actions taken regarding the implementation of the Raven Management Plan or the USFWS Regional Raven Management Plan. This report shall be made available to the BLM and the County.

Standards for Success: The Raven Management Plan is implemented, and ravens are, to the extent possible, deterred from nesting/foraging within the Project area.

MM WIL-CEQA-6: Conduct Pre-construction Surveys for Nesting and Breeding.

The following APMs, BMPs, and CMAs shall be incorporated within this MM WIL-CEQA-6: APM BIO-2, BMP BIO-02, APM BIO-20, BMP BIO-25, CMA DFA-BIO-IFS-1, CMA LUPA-BIO-1, CMA LUPA-BIO-16, CMA LUPA-BIO-IFS-26, and CMA LUPA-BIO-RIPWET-3. The Applicant shall retain a qualified avian biologist(s) (approved by the CPUC, BLM, and CDFW) to conduct pre-construction nesting bird surveys, within the recognized breeding season (generally 15 Feb – 15 Sep [1 Jan – 15 Aug for raptors]), for all areas within 500 feet of construction activities; construction activities include mobilization, staging, grading, and/or construction. These survey dates may only be modified with the approval of CDFW and USFWS (where applicable). Measures intended to exclude nesting birds shall only be implemented with the prior approval by the CDFW and/or USFWS. If breeding birds with active nests are found prior to or during construction, the qualified avian biologist shall establish a minimum 300-foot buffer (500 foot for raptors) around the nest and no activities shall be allowed within the buffer(s) until the young have fledged from the nest or the nest fails. The prescribed buffers may be adjusted by the qualified avian biologist based on existing conditions around the nest, planned construction activities, tolerance of the species, and other pertinent factors. Buffer reductions for listed or special-status species may require coordination with the USFWS and/or CDFW. The qualified avian biologist shall conduct regular monitoring of the nest to determine success/failure and to ensure that Project activities are not conducted within the buffer(s) until the nesting cycle is complete or the nest fails. The avian biologist shall be responsible for documenting the results of the surveys, implementing nest buffers, and documenting the results of ongoing monitoring by providing a copy of the monitoring reports for impact areas to the appropriate resource agencies (i.e., USFWS and CDFW). If trees with nests are to be removed as part of Project construction activities, they shall be done so outside of the nesting season to avoid additional impacts to nesting raptors. If removal during the nesting season cannot be avoided, all trees shall be inspected for active nests by the avian biologist. If nests are found within these trees, and contain eggs or young, no activities within a 300-foot buffer for nesting birds and/or a 500-foot buffer for raptors shall occur until the young have fledged the nest.

MM WIL-CEQA-6 Implementation

Responsible Party: The surveys for nesting and breeding avian species shall be completed by a qualified avian biologist (approved by the CPUC, BLM, and CDFW).

Timing: The surveys shall be completed within the recognized breeding season prior to construction activities for all areas within 500 feet of construction.

Mitigation Monitoring and Reporting Program: The Applicant shall submit documentation in the form of a report or technical memorandum that provides the pre-construction survey results and any avoidance of nesting recommended to the CPUC, CLM, and CDFW for review and approval.

Standards for Success: Nesting and breeding bird surveys are conducted within the Project site and required buffer distances prior to ground disturbing activities.

MM WIL-CEQA-8: Conduct Pre-Construction Protocol Surveys for Arizona Bell's Vireo, Southwestern Willow Flycatcher, and Willow Flycatcher; Avoid Occupied Habitat; Compensate Impacts.

The following APMs, BMPs, and CMAs shall be incorporated within this MM WIL-CEQA-8: APM BIO-20; APM BIO-21; BMP BIO-21; BMP BIO-29; BMP BIO-35; BMP BIO-36; BMP BIO-40; BMP BIO-48; BMP BIO-55; CMA LUPA-BIO-1; CMA LUPA-BIO-2; CMA LUPA-BIO-3; CMA LUPA-BIO-4; CMA LUPA-BIO-12; CMA LUPA-BIO-16; CMA LUPA-BIO-17; CMA LUPA-BIO-COMP-2; CMA LUPA-TRANS-BIO-1; and CMA LUPA-TRANS-BIO-2.

If Project related activities are scheduled to occur during the breeding season (generally 15 Feb – 15 Sep) the Applicant shall have a qualified avian biologist, approved by the CPUC, BLM, and CDFW, conduct protocol surveys prior to the start of construction for Arizona Bell's vireo (ABV), southwestern willow flycatcher (SWFL), and willow flycatcher (WFL) in suitable habitat within the Project area and 500 feet of disturbance areas. The surveys shall follow all current agency protocols (i.e., CDFW, USFWS). Prior to construction, documentation shall be submitted providing the results of the pre-construction focused surveys for ABV, SWFL, and WFL to the CPUC for review and approval in consultation with USFWS and CDFW. Protocol or focused nest location surveys, as appropriate, shall be conducted within one year prior to the start of construction and shall continue annually until completion of construction and restoration activities. If an active breeding territory or nest is confirmed, the CPUC, USFWS, and CDFW shall be notified immediately. All active nests shall be monitored on a weekly basis until the nestlings fledge or the nest becomes inactive. The Applicant shall provide monitoring reports to the CPUC for review on a weekly basis. In coordination with the USFWS and CDFW, a minimum 300-foot disturbance-free ground buffer shall be established around the active nest and demarcated by fencing or flagging. No construction or vehicle traffic shall occur within nest buffers.

The qualified biologist shall have the authority to halt construction activities and shall devise methods to reduce the noise and/or disturbance in the vicinity. This may include methods such as, but not limited to, turning off vehicle engines and other equipment whenever possible to reduce noise, installing a protective noise barrier between the nest site and the construction activities, and working in other areas until the young have fledged. All active nests shall be monitored on a weekly basis until the nestlings fledge.

Impacts and mitigation for Federal- and State-listed species shall be addressed through either the Section 7 or Section 10(a)(1)(B) process under the FESA with the USFWS, and either the Section 2080 or Section 2080.1 process under the CESA with the CDFW. Additionally, direct impacts to Federally-listed species' critical habitat that cannot be avoided shall also be addressed through either the FESA Section 7 or Section 10(a)(1)(B) process. Formal FESA consultation for Federally-listed species that have at least a moderate potential to occur and may be impacted by the Project include the Mojave Desert tortoise, razorback sucker, BLM, Phoenix Arizona

June 2019

southwestern willow flycatcher, western yellow-billed cuckoo, and Yuma Ridgway's rail. CESA consultation for State-listed species that have at least a moderate potential to occur and may be impacted by the Project include greater sandhill crane, Mojave Desert tortoise, razorback sucker, Swainson's hawk, southwestern willow flycatcher, western yellow-billed cuckoo, and Yuma Ridgway's rail. Additional mitigation may be required by each agency during the regulatory permitting process. Mitigation for impacts to listed species habitat shall consider and overlap with compensation for special-status plants, sensitive vegetation communities, and jurisdictional waters and wetlands.

MM BIO-CEQA-8 Implementation

Responsible Party: The focused protocol surveys for ABV, SWFL, and WFL shall be conducted by a qualified biologist(s).

Timing: The focused surveys shall be conducted during the required protocol windows should construction activities occur between 15 Feb and 15 Sep.

Mitigation Monitoring and Reporting Program: The Applicant shall submit documentation in the form of a report of technical memorandum that provides the survey results and any avoidance or relocation recommendations to the CPUC, BLM, and CDFW for review and approval. Responsible parties for the consultation include USFWS and CDFW.

Standards for Success: Protocol ABV, SWFL, and WFL surveys are completed within all suitable habitats in the Project area and required buffer distances.

MM WIL-CEQA-10: Compensation for Impacts to Mojave Desert Tortoise.

To meet CEQA requirements, the following APMs, BMPs, and CMAs are incorporated within this MM WIL-CEQA-10: APM BIO-2; BMP BIO-02; APM BIO-3; BMP BIO-03; APM BIO-4; APM BIO-17; APM BIO-23; BMP BIO-23; BMP BIO-35; BMP BIO-36; BMP BIO-44; BMP BIO-55; CMA DFA-BIO-IFS-1; CMA DFA-VPL-BIO-DUNE-1; CMA LUPA-BIO-1; CMA LUPA-BIO-2; CMA LUPA-BIO-3; CMA LUPA-BIO-4; CMA LUPA-; CMA LUPA-BIO-IFS-3BIO-7; CMA LUPA-BIO-12; CMA LUPA-BIO-13; CMA LUPA-BIO-14; CMA LUPA-BIO-IFS-5; CMA LUPA-BIO-IFS-6; CMA LUPA-BIO-IFS-7; CMA LUPA-BIO-IFS-8; and CMA LUPA-BIO-IFS-9.

Specifically, the following shall be implemented by the Applicant to protect and compensate for impacts to Mojave Desert tortoise:

- **Compensation for Impacts:** To fully mitigate for habitat loss and potential take of Mojave Desert tortoise, the Applicant shall provide compensatory mitigation at a minimum ratio of 2:1. For the purposes of this measure, the Project site (i.e., footprint) means all lands directly disturbed in the construction and operation of the Project, including all linear features, as well as undeveloped areas inside the Project's boundaries that will no longer provide viable long-term habitat for the Mojave Desert tortoise. To satisfy this measure, the Applicant shall acquire, protect and transfer two acres of Mojave Desert tortoise habitat for every acre of habitat within the final Project footprint, and provide associated funding for the acquired lands, as specified below (BLM 2018b). The Applicant shall coordinate with CPUC, BLM, and CDFW to determine the appropriate mitigation strategy and final replacement ratios and acreages. All mitigation shall be approved by the appropriate Federal and State regulatory agencies prior to Project activities.

The Applicant has another option for satisfying some or all of the requirements in this measure, in lieu of acquiring lands itself. The Applicant may satisfy the requirements of this measure by depositing funds into an account established with the NFWF.

Applicant shall acquire the land, in fee or in easement, within 12 months from the time the resource impact occurs, unless a 6-month extension is approved by the Authorizing Officer.

If compensation lands are acquired in fee title or in easement, the requirements for acquisition, initial improvement and long-term management of compensation lands include all of the following:

- Be within the appropriate Habitat Unit or, if sufficient land is unavailable, in other locations within approved by the appropriate Federal and State regulatory agencies;
 - Provide habitat for Mojave Desert tortoise with capacity to regenerate naturally when disturbances are removed;
 - Be prioritized near larger blocks of lands that are either already protected or planned for protection, or which could feasibly be protected long-term by a public resource agency or a non-governmental organization dedicated to habitat preservation;
 - Be connected to lands with Mojave Desert tortoise habitat equal to or better quality than the Project site, ideally with populations that are stable, recovering, or likely to recover;
 - Not have a history of intensive recreational use or other disturbance that does not have the capacity to regenerate naturally when disturbances are removed or might make habitat recovery and restoration infeasible;
 - Not be characterized by high densities of invasive species, either on or immediately adjacent to the parcels under consideration, that might jeopardize habitat recovery and restoration;
 - Not contain hazardous wastes that cannot be removed to the extent that the site could not provide suitable habitat; and
 - Have water and mineral rights included as part of the acquisition, unless consultation with the appropriate Federal and State agencies occurs and there is an agreement in writing to the acceptability of land.
- **Documentation:** The Applicant shall prepare a Mojave Desert Tortoise Protection and Compensation Plan. This plan shall be in accordance with Federal and State regulatory agencies policies, guidance, and protocols. In addition, this plan shall be approved by the appropriate regulatory agencies prior to Project commencement, and implemented, as necessary, during all Project phases. The Plan, shall at a minimum, discuss the potential for Mojave Desert tortoise to occur in the Project area (e.g., known occurrences, locations for potential suitable habitat, locations of burrows, fencing locations, etc.); provide an overview related to the potential for indirect and/or direct permanent impacts; outline methods and measures for avoidance, minimization, translocation, compensation, mitigation, and requirements for maintenance and monitoring.

In addition, the Applicant shall also prepare a Mojave Desert Tortoise Quarterly Compliance Report. The first Mojave Desert Tortoise Quarterly Compliance Report shall be complete prior to Project commencement and include a narrative describing species-specific pre-construction compliance measures completed. After the initial Mojave Desert Tortoise Quarterly Compliance Report is submitted prior to construction, subsequent reports shall be prepared and submitted quarterly until the completion of Project activities. If during construction, Mojave Desert tortoise are encountered, and/or relocated, then the following details shall be included in the Mojave Desert Tortoise Quarterly Compliance Report, as necessary.

- The locations (i.e., maps) and dates of observation;
- The location moved from and location moved to (i.e., exact coordinates);

- Ambient temperature when handled and released;
- Digital photograph(s) of each handled Mojave Desert tortoise;
- General condition and health, including injuries, state of healing and whether Mojave Desert tortoise voided their bladders; and
- Gender, carapace length, and diagnostic markings (i.e., identification numbers or marked lateral scutes).

MM WIL-CEQA-10 Implementation

Responsible Party: Supervision, guidance, and verification of mitigation as outlined in this measure shall be achieved the Applicant.

Timing: Prior to construction, field surveys shall be conducted by the Applicant (refer to MM WIL-CEQA-11 below) designated qualified biologist to assess for Mojave Desert tortoise habitat. Additionally, the Applicant designated qualified biologist shall conduct pre-construction clearance surveys for Mojave Desert tortoise in the Project area during the period when they are most active (i.e., March through May, or September through mid-November).

Mitigation Monitoring and Reporting Program: The Applicant shall prepare a Mojave Desert Tortoise Protection and Compensation Plan. In addition, the Applicant shall also prepare a Mojave Desert Tortoise Quarterly Compliance Report.

Standards for Success: Compensation implemented for desert tortoise that results in a no net loss of suitable habitat.

MM WIL-CEQA-11 Conduct Pre-construction Surveys for Listed and Special-Status Terrestrial Herpetofauna and Compensation for Impacts.

The following APMs, BMPs, and CMAs shall be incorporated within this MM WIL-CEQA-11: APM BIO-2; BMP BIO-02; APM BIO-3; BMP BIO-03; APM BIO-4; APM BIO-9; APM BIO-10; APM BIO-17; APM BIO-23; BMP BIO-23; BMP BIO-25; BMP BIO-35; BMP BIO-36; BMP BIO-44; BMP BIO-49; BMP BIO-53; BMP BIO-54; BMP BIO-55; CMA DFA-BIO-IFS-1; CMA DFA-VP; CMA LUPA-BIO-11L-BIO-DUNE-1; CMA LUPA-BIO-1; CMA LUPA-BIO-2; CMA LUPA-BIO-3 CMA LUPA-BIO-4; CMA LUPA-BIO-IFS-7; CMA LUPA-BIO-12; CMA LUPA-BIO-13; CMA LUPA-BIO-14; CMA LUPA-BIO-15; CMA LUPA-BIO-COMP-1; CMA LUPA-BIO-DUNE-1; CMA LUPA-BIO-DUNE-2; CMA LUPA-BIO-DUNE-3; CMA LUPA-BIO-DUNE-4; and CMA LUPA-BIO-DUNE-5; CMA LUPA-BIO-IFS-3; CMA LUPA-BIO-IFS-5; CMA LUPA-BIO-IFS-6; CMA LUPA-BIO-IFS-7; CMA LUPA-BIO-IFS-8; and CMA LUPA-BIO-IFS-9.

Conduct Pre-Construction Surveys for Listed and Special Status Terrestrial Herpetofauna and Compensate Impacts Prior to ground disturbance or vegetation clearing within the Project site, the Applicant shall retain a approved/qualified biologist to conduct surveys for special-status terrestrial herpetofauna (i.e., lizards, snakes, tortoise, etc.) where suitable habitat is present and directly impacted by construction vehicle access, or maintenance. Focused surveys shall consist of a minimum of three daytime surveys and one nighttime survey within one week of vegetation clearing. The qualified biologist shall be present during all activities immediately adjacent to or within habitat that supports special-status terrestrial herpetofauna. Clearance surveys for special-status terrestrial herpetofauna shall be conducted by the qualified biologist prior to the initiation of construction each day in suitable habitat. Special-status terrestrial herpetofauna found within the area of disturbance or potentially affected by the Project shall be relocated to the nearest suitable habitat that shall not be affected by the Project.

Desert Tortoise Specific Surveys

- **Field Surveys:** Prior to construction, field surveys shall be conducted by the Applicant designated qualified biologist to assess for Mojave Desert tortoise habitat (e.g., desert scrub vegetation communities dominated, cover sites- soil burrows, pallets, caliche caves, etc.).

Additionally, the Applicant designated qualified biologist, approved by the CPUC, BLM, and CDFW, shall conduct pre-construction clearance surveys for Mojave Desert tortoise in the Project area during the period when they are most active (i.e., March through May, or September through mid-November). During pre-construction clearance survey, the qualified biologist shall inspect construction pipes, culverts or similar structures with (a) with a diameter greater than 3 inches, (b) stored for one or more nights, (c) less than 8 inches aboveground, and (d) within Mojave Desert tortoise habitat, before the materials are moved, buried, or capped. As an alternative, such materials shall be capped before storing outside the fenced area or placing on pipe racks. Pipes stored within the long-term fenced area after completing desert tortoise clearance surveys would not require inspection.

Pre-construction habitat surveys and clearance surveys for Mojave Desert tortoise shall be conducted using techniques outlined in the *Desert Tortoise (Mojave Population) Field Manual (Gopherus agassizii)* (USFWS 2009).

- **Avoidance and Minimization:** If Mojave Desert tortoise habitat is present within the Project site and/or adjacent areas, at a minimum, the following avoidance and minimization measures shall be employed to reduce potential species impacts:
 - Mojave Desert tortoise habitat and burrows, if present, shall be mapped using the BLM NOC habitat mapping standards;
 - If potential habitat is identified in or adjacent to the Project site, then a qualified biological monitor shall be on-site during all Project activities, as necessary. The qualified biological monitor shall directly monitor site clearing and shall be onsite during grading activities to find and move Mojave Desert tortoises missed during the initial pre-construction tortoise clearance survey. Should a tortoise be discovered, it shall be relocated or translocated as described in the Mojave Desert Tortoise Protection and Compensation Plan;
 - ESA signage and exclusion fencing shall be installed at the appropriate buffer distance (i.e., resource setback), if suitable habitat is within or encroaches into the Project site (see further details under "fencing" below);
 - During Project activities, including on specific linear features (e.g., fencing, transmission lines, and access roads, etc.) and during operation and maintenance (O&M), all live Mojave Desert tortoises and active burrows shall be avoided to the extent possible. The Applicant shall ensure that the qualified biologist and biological monitor monitors any Project activities in unfenced areas for presence of Mojave Desert tortoises. If an active burrow cannot be avoided by construction activities, the burrow shall be excavated using protocols in *Desert Tortoise (Mojave Population) Field Manual (Gopherus agassizii)* (USFWS 2009). If a tortoise wanders into an unfenced, active Project work area, does not leave the area on its own accord (i.e., within 15 minutes), and cannot be avoided by Project activities, the Applicant shall ensure that the qualified biologist captures the Mojave Desert tortoise, implements a health assessment of the tortoise, relocates it to previously identified appropriate Project-adjacent habitat away from any active, unfenced Project work areas, and monitor the individual via telemetry, in accordance with the aforementioned Protocol. The qualified biologist and biological monitor shall have a copy of all measures, Federal and State permits, when monitoring Project activities. The qualified biologist and biologist monitor shall have the authority to halt all non-emergency activities that are in violation of the measures. Work shall

proceed only after hazards to Mojave Desert tortoise are removed, the species is no longer at risk, or the individual has been moved from harm's way by the qualified biologist. A Mojave Desert Tortoise Quarterly Compliance Report will be submitted quarterly to the appropriate Federal and State regulatory agencies (BLM 2018b); and

- Vehicular traffic would not exceed 15 miles per hour within the areas not cleared by protocol-level surveys where desert tortoise may be impacted.
- **Fencing:** The Applicant shall ensure that temporary and/or permanent tortoise exclusionary fencing is installed around active portions of the Project area following the pre-construction tortoise survey. The exclusionary fencing, whether temporary or permanent in nature, and shall be installed according to specifications in the *Desert Tortoise (Mojave Population) Field Manual (Gopherus agassizii)* (USFWS 2009). Specifications requires fencing to be buried 12 inches below the ground surface and extend to 22 to 24 inches above the ground surface. If a phased approach is implemented during the construction phase, the exclusionary fencing may be installed in phases, with pre-construction surveys conducted prior-to and clearance surveys conducted immediately after installation of the exclusionary fence. The Applicant shall also ensure that tortoise exclusionary fencing is maintained during the decommissioning phase to keep tortoises from accessing active work areas. Throughout the construction and decommissioning phases, the tortoise exclusionary fence shall be checked regularly to ensure its integrity (BLM 2018b).
 - Security Gates- For security fencing, the Applicant shall ensure that the Project's perimeter security fence includes exclusionary fencing that prevents Mojave Desert tortoises, and other burrowing animals, from accessing the Project site. The exclusionary fencing shall be installed at the base of the security in accordance with the protocols listed above, and cattle guards shall be installed at entrances to the Project. Specifically, security gates shall be designed with minimal ground clearance to deter ingress by tortoises. Tortoise guards shall be installed at gate locations. (BLM 2018b)
 - Fence Flagging- All fencing installation corridors shall be flagged to assist the qualified biologist in studying the fence route and surveying within 24 hours prior to the initiation of fence construction. Prior to the surveys the Applicant shall provide all appropriate Federal and State regulatory agencies map figures clearly depicting the limits of construction disturbance for the proposed fence installation (BLM 2018b).
 - Fence Installation- The exclusion fencing shall be installed prior to the onset of site clearing and grubbing. The fence installation shall be supervised by the qualified biologist and monitored to ensure the safety of any tortoise present (BLM 2018b).
 - Fence Inspections- Following installation of the Mojave Desert tortoise exclusion fencing, the fencing shall be regularly inspected during construction, operations, and decommissioning. If Mojave Desert tortoise were moved out of harm's way during fence construction, fencing shall be inspected daily for the first 7 days to ensure a recently moved Mojave Desert tortoise has not been trapped within the fence. Thereafter, fencing shall be inspected quarterly and during and within 24 hours following major rainfall events. A major rainfall event is defined as one for which flow is detectable within the fenced drainage. Any damage to the fencing shall be temporarily repaired immediately to keep Mojave Desert tortoises out of the site, and permanently repaired within 48 hours of observing damage. Inspections of site fencing shall occur for the life of the Project.
 - Temporary fencing shall be inspected weekly and, where drainages intersect the fencing, during and within 24 hours following major rainfall events. All temporary fencing shall be

repaired immediately upon discovery and, if the fence may have permitted Mojave Desert tortoise entry while damaged, the qualified biologist shall inspect the area for Mojave Desert tortoise (BLM 2018b).

- Tortoise Encounters- If a tortoise is encountered along the inside or outside of the fence, the qualified biologist shall capture and relocate in accordance with the protocols listed above (i.e., USFWS 2009, Chapter 7), perform a health assessment, attach a radio transmitter to the tortoise in accordance, and release the Mojave Desert tortoise in a previously identified Project-adjacent relocation areas supporting Mojave Desert tortoise habitat in accordance with USFWS and all other appropriate Federal and State regulatory agencies (BLM 2018b).
- Fence Removal- Temporary exclusionary fencing shall be removed following completion of the construction and decommissioning phases.

With the exception of desert tortoise, compensation for temporary impacts to special-status terrestrial herpetofauna (including Couch's spadefoot toad and Mojave fringe-toed lizard) potential/modelled habitat shall include on-site habitat restoration at a minimum 1:1 ratio. Compensation for permanent impacts to desert tortoise and special-status wildlife on-site surveyed habitat shall include a) off-site creation, enhancement, and/or preservation, and/or b) participation in an established mitigation bank program at a minimum 3:1 ratio. Compensation for temporary and permanent impacts for all other special-status wildlife habitat shall include a combination of a) on-site habitat creation or enhancement with similar species compositions to those present prior to construction, b) off-site creation, enhancement, and/or preservation, and/or c) participation in an established mitigation bank program at a 2:1 minimum ratio. The Applicant shall coordinate with CPUC, BLM, and CDFW to determine the appropriate mitigation strategy and final replacement ratios and acreages. All mitigation shall be approved by the appropriate Federal and State regulatory agencies prior to Project activities.

Compensation for impacts to desert tortoise are detailed above in MM WIL-CEQA-10. Impacts and mitigation for the Mojave Desert tortoise shall be addressed through either the Section 7 or Section 10(a)(1)(B) process under the FESA with the USFWS, and either the Section 2080 or Section 2080.1 process under the CESA with the CDFW. Mitigation for impacts to all listed and special-status species habitat shall consider and overlap with compensation for special-status plants, sensitive vegetation communities, and jurisdictional waters and wetlands.

MM WIL-CEQA-11 Implementation

Responsible Party: Supervision, guidance, and verification of mitigation as outlined in this measure shall be achieved the Applicant.

Timing: General surveys shall be conducted year-round with desert tortoise surveys focused on the periods of expected activity. Prior to construction, field surveys shall be conducted by an Applicant designated qualified biologist to assess for Mojave Desert tortoise habitat. Additionally, the Applicant designated qualified biologist shall conduct pre-construction clearance surveys for Mojave Desert tortoise in the Project area during the period when they are most active (i.e., March through May, or September through mid-November).

Mitigation Monitoring and Reporting Program: The Applicant shall prepare a technical report detailing the results of all terrestrial herpetofauna and desert tortoise surveys.

Standards for Success: Compensation implemented for all listed/special-status terrestrial herpetofauna, including desert tortoise, that results in a no net loss of suitable habitat.

APPENDIX B – DESERT TORTOISE ACTIVITY REQUEST FORM

Intentionally Left Blank

Activity Request Form

This consultation consists of the programmatic biological opinion, the Bureau of Land Management's (Bureau) request to use the programmatic biological opinion for the proposed action with project-specific information (Part A), the Fish and Wildlife Service's (Service) response (Part B), and the Bureau's post-project reporting (Part C). This form will be filled out and sent electronically. If your response to any question does not fit in the fillable box, please add extra pages and note the additional pages in the box.

For projects that affect 10 acres of habitat or less or that do not involve ongoing impacts to desert tortoises that are associated with transportation, the Service's Division Chief will have 30 days to respond via electronic mail if she or he has any concerns with use of the programmatic biological opinion. The Bureau may assume that the Service has no concerns if it does not respond by the close of the 30-day period; as a courtesy, the Service's Division Chief will attempt to notify the Bureau of her or his decision as soon as possible.

For projects that affect more than 10 acres or that will involve ongoing impacts to desert tortoises that are associated with transportation, the Service's Division Chief will respond within 30 days by signing and returning the activity form via electronic mail. The Bureau will not authorize or implement such projects until it receives notification from the Service.

Part A: Request to Implement an Activity by the Bureau

Date of request from Bureau:

Bureau point of contact: Mark Massar

Phone number/e-mail: mmassar@blm.gov / 760-833-7121

Project/activity title: Ten West Link Transmission Line Project

Proponent/applicant: DCR Transmission, LLC

Number of desert tortoises potentially impacted:

> 180 mm: 1

< 180 mm: 1

Number of acres anticipated to be affected:

Non-critical habitat: 125

Critical habitat: none

Description of Proposed Action:

Attach a map of the action area to form



What is the Federal action (e.g., right-of-way, permit, lease, etc.)?

Rights of Way

When would the action begin?

11/01/2020

When would the action end? 01/01/2072

What are the specific activities that would be implemented?

See Biological Assessment Section 2

How will access to work areas be accomplished? List equipment and routes of travel.

Primary access to the transmission line on Palo Verde Mesa will be via either the access road to the Colorado River Substation (west side) and 22nd Avenue and Power Line Road (east side). Access to structures and work areas in that area will be from a series of existing roads and new roads, including numerous spur roads into structure work areas.

List proposed Conservation and Management Actions:

See Biological Assessment Appendix A for a complete list of conservation and management actions.

- Before starting any work, including mowing, staging, installing stormwater control structures, implementing other BMPs, removing trees, construction, and restoration, all employees and contractors performing activities and new construction would receive training on environmental requirements that apply to their job duties and work. If additional crewmembers arrive later in the job, they would be required to complete the training before beginning work. Training would include a discussion of the avoidance and minimization measures being implemented and would include information on the Federal and state Endangered Species Acts and the consequences of not complying with these Acts. An educational brochure would be provided to construction crews working on the Project. This brochure would include color photographs of special-status species as well as a discussion of avoidance and minimization measures (BIO-01).
 - A qualified biologist would be present during all ground-disturbing activities in non-cultivated areas in California to survey and monitor construction sites for the presence of Mojave Desert tortoises, and move Mojave Desert tortoises out of harm's way. Burrows near construction sites would be clearly delineated and protected to the extent possible (APM-BIO-23, APM-BIO-25)
 - A Raven Management Plan would be prepared and implemented to address food and water subsidies, and to avoid providing perches, nesting sites, and roosting sites for the common raven, and provide compensatory mitigation that contributes to LUPA-wide raven management (BMP-BIO-28)
 - All culverts for access roads or other barriers would be designed to allow unrestricted access by Mojave desert tortoises, and Mojave desert tortoise exclusion fencing may be utilized to direct Mojave desert tortoise use of culverts and other passages (BMP-BIO-44)
 - A designated biologist would accompany any geotechnical testing equipment to ensure no Mojave desert tortoises are killed and no burrows are crushed (BMP-BIO-44)
 - The ground would be inspected under vehicles for the presence of Mojave Desert tortoise any time a vehicle or construction equipment is parked in Mojave Desert tortoise habitat. If the Mojave desert tortoise does not move on its own within 15 minutes, a designated biologist may remove and relocate the animal to a safe location (BMP-BIO-44)
-

- Vehicular traffic would not exceed 15 mph within the areas not cleared by protocol level surveys where Mojave desert tortoise may be impacted (BMP-BIO-44)
- A Compensation Plan would be developed to meet BLM requirements from the DRECP and other mitigation agreements. The Compensation Plan would include calculations of compensation ratios and mitigation acreages for loss of habitat for special status and protected native plant species, special status plant communities, Mojave Desert tortoise, Sonoran desert tortoise, and any other biological resource requiring additional mitigation. As consistent with BLM policy and resource management plans, compensatory mitigation could include payment of an in-lieu fee; acquiring mitigation land or conservation easements; restoration or habitat enhancement activities on public lands; or a combination of the three (MM-BIO-1).

Survey Summary and Results:

Attach survey report to form Signature

(Responsible Bureau Official):

Part B: Service Response

Service File No. for Proposed Activity:

Date of FWS response to Bureau:

Conclusion

Is this project appropriate for use under the programmatic biological opinion? -

Additional protective measures or Conservation and Management Actions agreed to by the Bureau and Service during consultation:

Signature:

Division Chief
Palm Springs Fish and Wildlife Office Palm
Springs, California

Part C: Post-project Reporting

Number of desert tortoises:

Killed:

Injured:

Moved:

Number of acres actually disturbed:

Non-critical habitat:

Critical habitat:

Other effects not described above:

Recommendations to improve protection of desert tortoises during future project activities:

The following is a summary of information about Mojave Desert tortoises, including information about their abundance within and near the action area for the Ten West Link Transmission Line Project.

Legal Status. The Mojave population of desert tortoises was emergency listed as endangered in 1989 (54 FR 32326) and reclassified as threatened in 1990 (55 FR 12178). Critical habitat for this species was designated in 1994 in portions of the Mojave and Colorado Deserts, totaling 6.4 million acres (59 FR 5820). The eastern boundary of the Chuckwalla Unit of critical habitat is about 3.0 miles west of the Colorado River substation, the western terminus of the TWL transmission line.

Distribution and Abundance. Desert tortoise populations have declined throughout their historical range and have been extirpated in parts of their range (USFWS 2011, LCR MSCP 2016). Based on genetic and morphological characteristics, desert tortoises have been divided into two species: Sonoran desert tortoises (*Gopherus morafkai*) and Mojave Desert tortoises (LCR MSCP 2016). The Mojave species occurs north and west of the Colorado River, and the Sonoran species occurs south and east of the Colorado River (USFWS 1994). Studies conducted in California during the 1970s and in Nevada and Utah during the 1980s found that population declines occurred in the western part of the desert tortoise's range in the Mojave region (LCR MSCP 2016). Those studies found that in California's western Mojave Desert, populations may have declined as much as 90% since 1940, and locally as much as 70% from 1976 to 1984. In Kern County's Desert Tortoise Natural Area, significant declines resulted in a reduction of 88% of that area's tortoise population; a similar decline of 84% was reported for Johnson Valley. Declines also were reported in the Western Mojave Desert Recovery Unit (USFWS 1994, 2011).

Habitat. In the Mojave Desert, a wide range of habitats are occupied by desert tortoises; the most commonly noted are alluvial fans and gentle slopes at elevations less than 4,000 feet dominated by the shrubs creosote bush and white bursage (USFWS 1994, 2011). Other commonly occupied habitats include those dominated by saltbush (*Atriplex* sp.), other sclerophyll shrubs, and small cacti (LCR MSCP 2016); Joshua tree (*Yucca brevifolia*) woodlands and blackbrush (*Coleogyne ramosissima*) habitats also are known to be occupied by desert tortoises. Native desert grasses, and in particular big galleta (*Hilaria rigida*) and Indian rice grass (*Oryzopsis hymenoides*), generally are associated with high desert tortoise densities. The basic habitat requirements of desert tortoises are sufficient, suitable plants for forage and cover, and suitable substrates for burrow and nest sites (USFWS 1994). Burrows can be up to 10 meters deep and usually are directly below vegetation or in caves in washes (LCR MSCP 2016). Anderson et al. (2000) found that desert tortoises are more likely to be found in areas with southwest exposures and loamy soils and are least likely to be found in areas of stony soils, northern exposures, and areas of very low plant cover.

Threats. Desert tortoises have been extirpated or have severely declined from the western and northern parts of their geographic range in California, including the Antelope, Indian Wells, and Searles Valleys. The major causes for decline of desert tortoises are habitat destruction, degradation, and fragmentation from urban and agricultural development; livestock grazing; mining; nonnative, invasive plants; fire; and off-highway vehicle (OHV) use (USFWS 1994, USWS 2011). Other major threats to this species include direct mortality or injury caused by predation, human activities, and disease. Predators of desert tortoises include common ravens (*Corvus corax*), kit foxes (*Vulpes macrotis*), bobcats (*Lynx rufus*), and coyotes (*Canis latrans*). The common raven, whose numbers have increased exponentially in the Mojave and Colorado Deserts since 1968, is a major predator of juvenile tortoises.

Presence within the Action Area. The TWL transmission line route crosses potential desert tortoise habitat on Palo Verde Mesa for about 11 miles from the edge of cultivated fields in Palo Verde Valley to the Colorado River Substation. Soils in that area are very sandy, and in some areas, such as surrounding and near the substation, there are extensive sand sheets and small dunes (**Figure 1**). Vegetation is sparse and dominated by creosote bush, white bursage, and big galleta (HDR 2016, Transcon 2017). There are linear stands of blue palo verde (*Parkinsonia florida*) and Anderson thornbush (*Lycium andersonii*) along a small number of washes flowing from the Mule Mountains to the south and the McCoy Mountains to the north.

Numerous surveys have been conducted for desert tortoises prior to the construction of transmission lines that connect to the Colorado River Substation (CPUC 2011; Power Engineering 2012). **Figure 2**, from Power Engineers (2012) shows the results of some of those surveys. Scattered bone fragments, scat, potential burrows, and other sign of desert tortoises were found within about 1 mile west of the substation and between the TWL route and I-10 during supplemental surveys for the Blythe Mesa and Devers-Palo Verde transmission lines (Power Engineers 2012). Sign of desert tortoises was more abundant near the northern base of the Mule Mountains and in the washes that flow north from those mountains (**Figure 8**). Desert tortoise carcasses and potential burrows also were found south of the substation and near the highway during surveys of a transmission line route to the substation for the Blythe Solar Project (AECOM 2010).

The U.S. Geological Survey has created a model that predicts the likelihood that an area provides habitat for Mojave Desert tortoises. That model ranks, on a scale of 0 (no habitat) to 1 (habitat), the areas crossed by the proposed route and alternative segments in California from 0 to 0.3 (Nussear et al. 2009) (**Figure 3**). Higher-elevation areas to the south toward the Mule Mountains and north toward the McCoy Mountains are predicted to have a higher habitat potential. Because of the sandy soil and corresponding low plant productivity, the abundance of tortoises along the transmission line route on Palo Verde Mesa is probably much lower than in surrounding, higher-elevation areas.

References

- AECOM. 2010. Blythe Solar Power Project Biological Resourced Data Riverside County, California. AECOM, San Diego California, June.
- Anderson, M.C., J.M. Watts, J.E. Freilich, S.R. Yool, G.I. Wakefield, J.F. McCauley, and P.B. Fahnestock. 2000. Regression-tree modeling of desert tortoise habitat in the Central Mojave Desert. *Ecological Applications* 10(3):890–900.
- CPUC (California Public Utilities Commission). 2011. Supplemental Draft Environmental Impact Report Colorado River Substation Expansion. CPUC, Sacramento, California, February.
- HDR, Inc. 2016. Results of *Eriastrum harwoodii* Focused Surveys for the Ten West Link Project on BLM Lands, Riverside County, California. HDR, Irvine, California, June.
- LCR MSCP. 2016. Species Accounts for the Lower Colorado River Multi-Species Conservation Program. Bureau of Reclamation, Lower Colorado Region, Boulder City, Nevada, June.
- Nussear, K. E., T. C. Esque, R. D. Inman, L. Gass, K. A. Thomas, C. S. A. Wallace, J. B. Blainey, R. D. Miller, and R. H. Webb. 2009. Modeling Habitat of the Desert Tortoise (*Gopherus agassizii*) in the Mojave and Parts of the Sonoran Deserts of California, Nevada, Utah, and Arizona, U.S. Geological Survey Open-File Report 2009-1102.
- Power Engineers. 2012. Blythe Mesa Solar Project 230kV Transmission Line Alternatives Habitat Assessment Report. Power Engineers, San Diego, California, August.
- Transcon Environmental. 2017. Rare Plant Survey Report. Ten West Link 500 kV Transmission Line Project Riverside County, California. Transcon Environmental, Mesa, Arizona. July.
- USFWS (U.S. Fish and Wildlife Service). 1994. Desert Tortoise (Mojave Population) Recovery Plan. U.S. Fish and Wildlife Service, Portland, Oregon. 73 p. plus appendices.
-

USFWS. 2011. Revised Recovery Plan for the Mojave Population of the Desert Tortoise (*Gopherus agassizii*). U.S. Fish and Wildlife Service, Pacific Southwest Region, Sacramento, California.



Figure 1. Potential desert tortoise habitat in Palo Verde Valley (top) and area surrounding the Colorado River Substation (bottom).

Biological Assessment for the Ten West Link Transmission Line Project

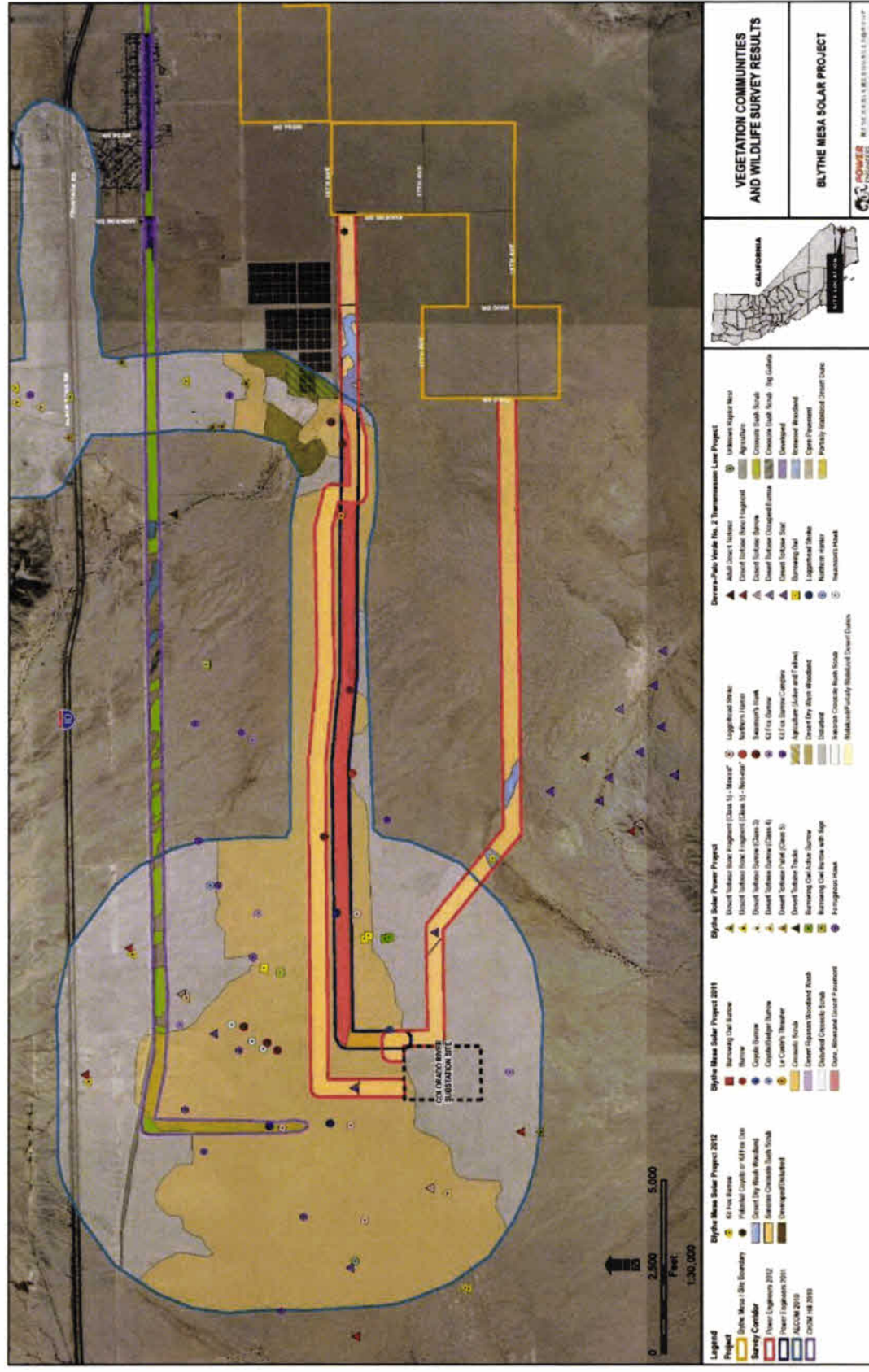


Figure 2. Survey Results of desert tortoises and their sign found near the Colorado River Substation (Power Engineers 2012).

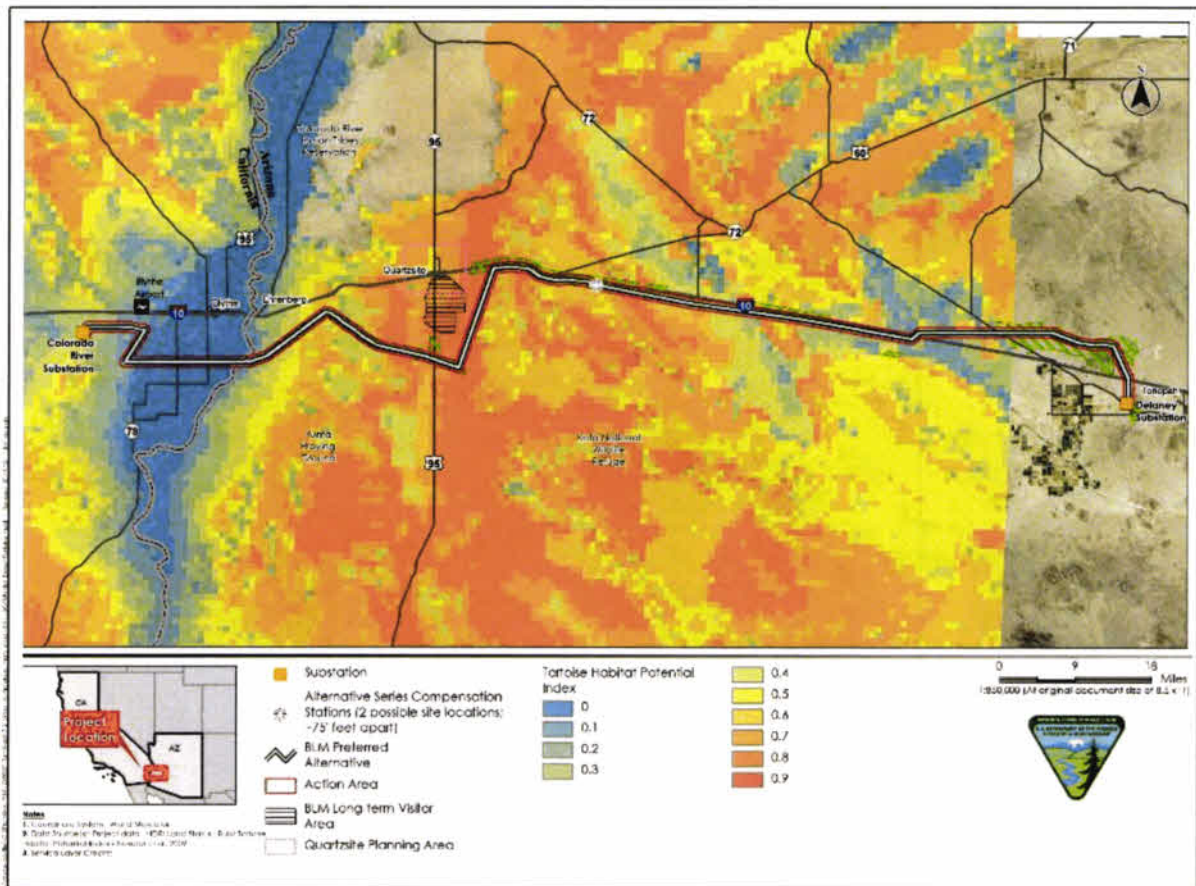


Figure 3. Model of tortoise habitat potential (Nussear et al. 2009).

**APPENDIX C –
IDENTIFYING BIRD STRIKE AVOIDANCE TECHNOLOGY FOR THE
TEN WEST TRANSMISSION LINE
EDM 2019**

Intentionally Left Blank



Identifying Bird Strike Avoidance Technology for the Ten West Link Transmission Line



Prepared for:
DCR Transmission, LLC



Prepared by:
EDM International, Inc.



4001 Automation Way
Fort Collins, Colorado 80525-3479 USA

970/204-4001 ♦ Fax:
970/204-4007
Email: ♦ www.edmlink.com

May 2019



TABLE OF CONTENTS

1.	INTRODUCTION	1-1
2.	TASK 1 – EVALUATE AVAILABLE BIRD STRIKE AVOIDANCE TECHNOLOGIES	2-1
2.1.	Bird Flight Diverter – Preformed Line Products.....	2-3
2.2.	Swan Flight Diverter	2-4
2.3.	Avian Flight Diverter – Power Line Sentry	2-5
2.4.	Avian Flight Diverter – TE Connectivity	2-5
2.5.	FireFly High Wind Bird Diverter – P&R Technologies	2-6
2.6.	CROCFast Clamp Diverter – Carbon 2050	2-6
2.7.	BirdMARK and FireFly Bird Flight Diverter	2-7
2.8.	FireFly FF Bird Flight Diverter – P&R Technologies.....	2-7
2.9.	QuickMark Low Line Marker – P&R Technologies.....	2-8
2.10.	Raptor Clamp – Preformed Line Products	2-9
2.11.	Overhead Warning Light Diverter – Preformed Line Products.....	2-9
2.12.	Small Unmanned Aircraft System	2-10
2.13.	Avian Collision Avoidance System	2-10
3.	TASK 2 – AVIAN RISK	3-1
4.	LITERATURE CITED	4-1

LIST OF FIGURES

Figure 3-1. BFD by Preformed Line Products.....	2-3
Figure 3-2. BFDs for various wire sizes.	2-3
Figure 3-3. BFD coated to glow in the dark.	2-4
Figure 3-4. SFD.	2-4
Figure 3-5. SFD being placed on a static wire.	2-4
Figure 3-6. Power Line Sentry AFDs.....	2-5
Figure 3-7. TE Connectivity AFD.....	2-5
Figure 3-8. The FireFly HW glows in the dark and emits a UV light visible to birds in low light/foggy conditions.	2-6
Figure 3-9. Static CROCFast Bird Diverter.....	2-6
Figure 3-10. Dynamic CROCFast Bird Diverter.....	2-6
Figure 3-11. BirdMARK device.	2-7
Figure 3-12. BirdMARK BM AG flight diverter.	2-7
Figure 3-13. FireFly during the day.	2-8
Figure 3-14. FireFly at night.	2-8
Figure 3-15. QuickMark Low Line Marker.....	2-8
Figure 3-16. Raptor Clamp Diverter.....	2-9
Figure 3-17. Raptor Clamp LED Diverter.....	2-9
Figure 3-18. OWL Diverter designed for improved effectiveness in nocturnal and low- light situations.....	2-9
Figure 3-19. Installing markers using a helicopter versus using a small UAS.	2-10
Figure 3-20. ACAS-illuminated power line span crossing the Central Platte River.	2-11
Figure 5-1. Recommended line marking at canal crossings.	3-2
Figure 5-2. Recommended line marking between structures 343 and 391.	3-3

LIST OF TABLES

Table 3-1. Line marker manufacturers, contact information, device names, and descriptions.....	2-2
---	-----

ACRONYMS AND ABBREVIATIONS

AC	alternating current
ACAS	Avian Collision Avoidance System
AFD	Avian Flight Diverter
BA	Biological Assessment
BFD	Bird Flight Diverter
cm	centimeter
DCRT	DCR Transmission, LLC
EDM	EDM International, Inc.
EPRI	Electric Power Research Institute
EWT	Endangered Wildlife Trust
HW	high wind
kV	kilovolt
LED	light-emitting diode
mm	millimeter
OHS	overhead shield/static
OWL	Overhead Warning Light
PVC	polyvinyl chloride
Rowe	Iain Nicolson Audubon Center at Row Sanctuary
SFD	Swan Flight Diverter
SVD	Spiral Vibration Damper
UAS	Unmanned Aircraft System
UV	ultraviolet

1. INTRODUCTION

DCR Transmission, LLC (DCRT) is developing the Ten West Link Transmission Line which will involve the construction and operation of a new single-circuit, series-compensated, 500-kilovolt (kV) alternating current (AC) overhead transmission line between Arizona Public Service Company's Delaney Substation near Tonopah, Arizona and Southern California Edison Company's Colorado River Substation, located west of Blythe, California. The proposed project is in Maricopa and La Paz Counties in Arizona, and Riverside County in California.

As part of developing the Biological Assessment (BA) for the project, DCRT requested EDM International, Inc. (EDM) help identify bird strike avoidance technology, focusing on the following three federally protected species near the Colorado River crossing and adjacent agricultural area (the Study Area):

- Yellow-billed Cuckoo (*Coccyzus americanus*)
- Southwestern Willow Flycatcher (*Empidonax traillii extimus*)
- Yuma Clapper Rail (*Rallus longirostris yumanensis*)

Task 1 – Evaluate available bird strike avoidance technologies designed to mitigate avian collision and include line marker deployment strategies (installation by helicopter versus small Unmanned Aircraft System [UAS]). Provide contextual information on avian vision as a foundation for information describing line illumination, an emerging approach to mitigating avian collisions with power lines. Provide specific information on the best available science regarding power line collisions involving the Yellow-billed Cuckoo, Southwestern Willow Flycatcher, and Yuma Clapper Rail.

Task 2 – Prepare a concise report summarizing avian collision risk.

2. TASK 1 – EVALUATE AVAILABLE BIRD STRIKE AVOIDANCE TECHNOLOGIES

A wide array of bird strike avoidance technologies is available. The primary means to reduce avian-power line collisions on existing lines is to make wires more visible to birds by installing line markers (Table 2-1). Wire-marking devices increase the line profile, particularly for the smaller-diameter OHS wires. Wire marking is a tool that typically reduces, but does not eliminate, collision risks. For example, in several studies wire marking reduced Sandhill Crane (*Antigone canadensis*) collisions by up to 61% (Morkill and Anderson 1991, Brown and Drewien 1995). The most robust wire-marking studies normalize the number of collision fatalities by the number of bird crossings. These studies reported mortality reductions from wire marking ranging from 55% to 94%, with a mean reduction of 78% (Barrientos et al. 2011).

From an engineering perspective, wire marking is not an option for all power lines. Devices that enlarge the wire may be prone to wind or ice loading, increased line tension and stress loads, and elevated risk of wire breaks and power outages. Devices may damage the conductors from abrasion. Clamping devices on a fiber optic ground wire may void the manufacturer's warranty. Finally, devices may cause excessive corona when installed on high-voltage conductors.

Two types of marking devices exist. "Passive" marking devices do not have moving parts; these include the Bird Flight Diverter (BFD), Swan Flight Diverter (SFD), Spiral Vibration Damper (SVD), and Avian Flight Diverter (AFD). "Active" marking devices consist of markers with moving parts such as the BirdMARK and FireFly.

In addition to line markers, two recent technologies are available for consideration. The first is to install line markers using a small UAS to reduce costs and human risk associated with helicopter installation. The second is the Avian Collision Avoidance System (ACAS), which uses ultraviolet (UV) light to illuminate not only overhead shield/static (OHS) wires, but also all conductors. Each of these approaches is described in detail in Sections 2.12 and 2.13, respectively.

Table 2-1. Line marker manufacturers, contact information, device names, and descriptions

Manufacturer	Phone	Website	Device	Description
Passive				
P & R Technologies	503-292-8682	www.pr-tech.com	FireFly HW	ABS Makrolon Plastic Plate
Power Line Sentry, LLC	970-599-1050	www.powerlinesentry.com	Bird Flight Diverter	Tent
Preformed Line Products	440-461-5200	www.preformed.com	Bird Flight Diverter and Swan Flight Diverter	Coiled Solid PVC Wire Marker
Preformed Line Products	440-461-5200	www.preformed.com	Spiral Vibration Damper	Vibration Dampers
TE Connectivity	336-689-7348	www.te.com	Avian Flight Diverter	Tent
Active				
Balmoral Engineering	02-9482-4222	balmoralengineering.com.au	ROTAMARKA	Spinning Pinwheel
Carbon 2050 Ltd.	44 (0)7557 406141	www.carbon2050.co.uk	CROCFast Clamp - Static Diverter	Swinging Plate
Carbon 2050 Ltd.	44 (0)7557 406141	www.carbon2050.co.uk	CROCFast Clamp - Dynamic Diverter	Spinning Plate
P & R Technologies	503-292-8682	www.pr-tech.com	BirdMARK BFD/ BirdMARK BM-AG	Swinging Plate
P & R Technologies	503-292-8682	www.pr-tech.com	FireFly FF	Swinging Plate
P & R Technologies	503-292-8682	www.pr-tech.com	QuickMark	Swinging Plate
Preformed Line Products	440-461-5200	www.preformed.com	Raptor Clamp Diverter	Swinging Plate
Preformed Line Products	440-461-5200	www.preformed.com	Raptor Clamp LED Diverter	Swinging Plate/LED
Preformed Line Products	440-461-5200	www.preformed.com	OWL Diverter	Swinging Plate/LED/Coil

Notes: BFD=Bird Flight Diverter; HW=high wind; LED=light-emitting diode; OWL=Overhead Warning Light; PVC=polyvinyl chloride.

2.1. Bird Flight Diverter – Preformed Line Products

The BFD (Figure 2-1) was developed in Europe during the 1970s and is made from a high-impact, UV-stabilized standard polyvinyl chloride (PVC). The Preformed Line Products BFD is available in a variety of colors and sizes to accommodate conductors ranging from 4.445 to 30.7848 millimeters (mm) (Figure 2-2).

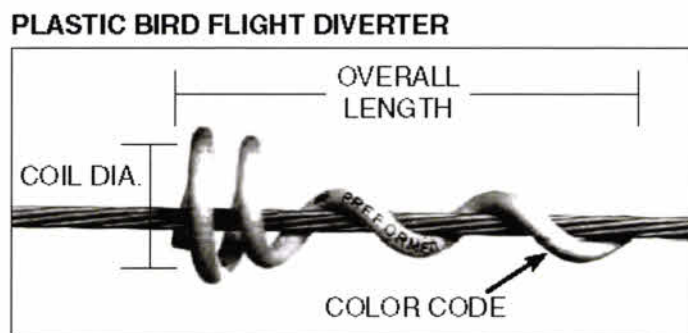


Figure 2-1. BFD by Preformed Line Products.

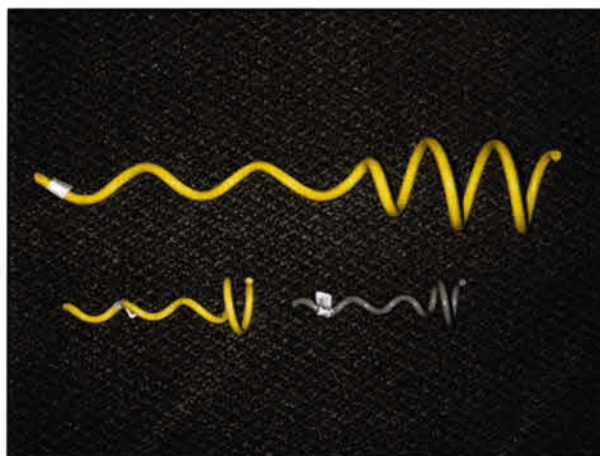


Figure 2-2. BFDs for various wire sizes.

BFDs spaced 20 feet apart were shown to effectively reduce waterfowl collisions with OHS wires (Crowder 2000). The BFD is believed to be effective because its profile increases line visibility. The colors may fade after long periods of exposure, but the BFDs are not known to become brittle and break, or to lose their elastic properties. As described in van Rooyen (pers. comm. 2000), Eskom used the Preformed Line Products BFD in South Africa for years with no reports of mechanical failure, although some red PVC devices have faded. BFDs may be ordered with a glow-in-the-dark coating (Figure 2-3).

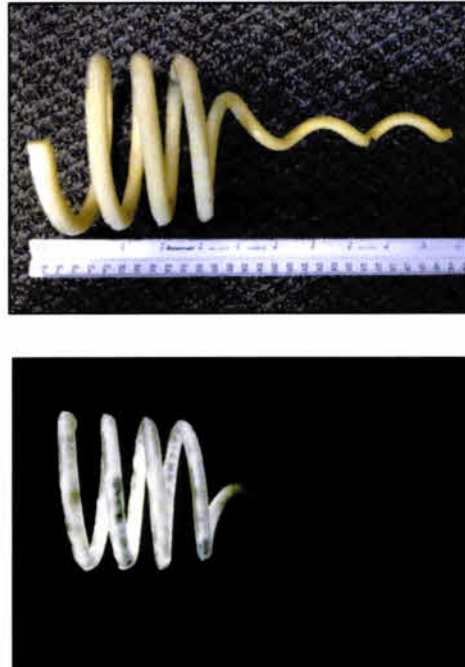


Figure 2-3. BFD coated to glow in the dark.

2.2. Swan Flight Diverter

The SFD is similar to the BFD but includes three 20-centimeter (cm) spirals (Figure 2-4 and Figure 2-5). The SFD is also made from a high-impact, UV-stabilized PVC. The Preformed Line Products SFD is available in a variety of colors and sizes to accommodate conductors ranging from 4.445 to 30.7848 mm.

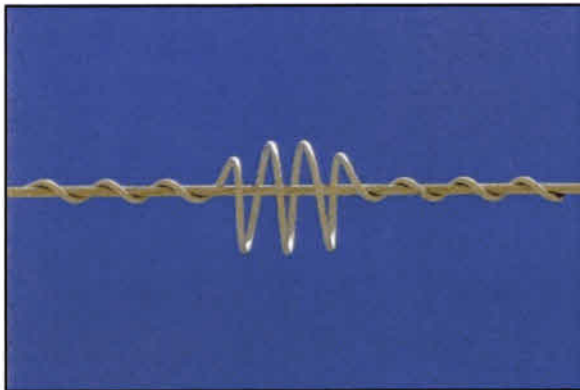


Figure 2-4. SFD.



Figure 2-5. SFD being placed on a static wire.

2.3. Avian Flight Diverter – Power Line Sentry

The Power Line Sentry AFD (Figure 2-6), made from UV-resistant rigid PVC incorporates reflective material along the outside edges of the device and a glow-in-the-dark material at the center. This material may glow for up to 24 hours, thus maximizing effectiveness at dawn when birds may be moving in low-light conditions. The cross-section shape and color array contrasts with the sky at all angles to maximize device visibility. Each device is 15 cm long, weighs 120 grams, and may be installed using a hot stick.



Figure 2-6. Power Line Sentry AFDs.

2.4. Avian Flight Diverter – TE Connectivity

The TE Connectivity AFD (Figure 2-7) is made from a UV-resistant polymer. It can be installed via a hot stick, and incorporates a highly reflective strip and a glow-in-the-dark strip on each side. Illumination may last up to 12 hours. The design uses a shear bolt for quick and effective tensioning to factory specifications during deployment. The device can be easily removed from lines, if necessary.

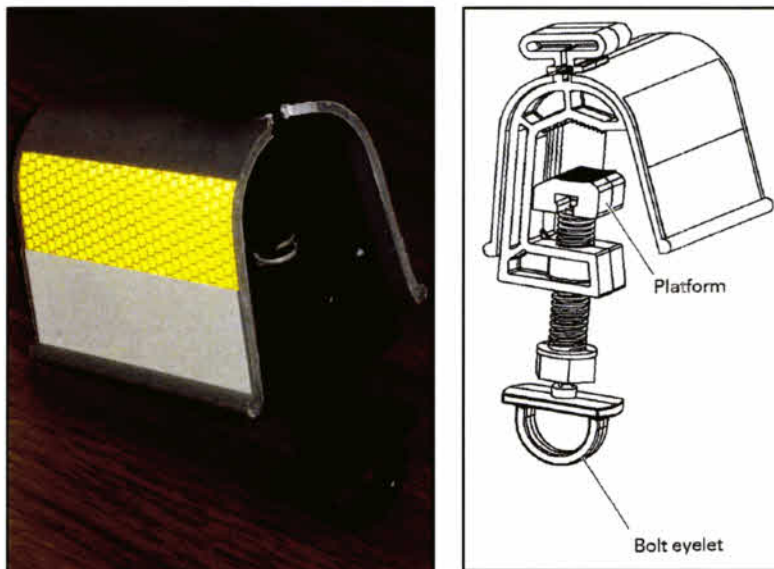


Figure 2-7. TE Connectivity AFD.

2.5. FireFly High Wind Bird Diverter – P&R Technologies

The P&R Technologies FireFly High Wind (HW) bird diverter (Figure 2-8) is made from impact-resistant and UV-stabilized acrylic, and is designed for durability in sustained wind. The device clamps onto lines with a hot stick and includes a reflective and fluorescent plate.



Figure 2-8. The FireFly HW glows in the dark and emits a UV light visible to birds in low light/foggy conditions.

2.6. CROCFast Clamp Diverter – Carbon 2050

Carbon 2050 manufactures two bird diverters—a swinging plate (static) and a spinning plate (dynamic)—that attach via a CrocFast clamp made from UV-stable nylon-66 Supertough and stainless steel. The static diverter paddle sways in the wind but does not swivel (Figure 2-9). The dynamic diverter paddle incorporates cups to facilitate spinning in the wind (Figure 2-10). The markers are lightweight and can be installed by hand or hot stick without interruption of power. The flapper paddles are available in orange or glow-in-the-dark nylon-6 material.



Figure 2-9. Static CROCFast Bird Diverter.

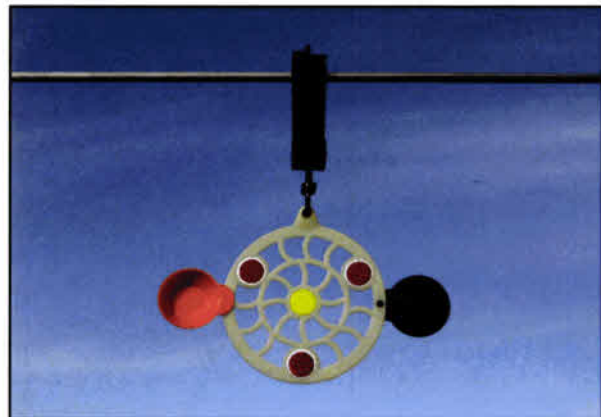


Figure 2-10. Dynamic CROCFast Bird Diverter.

2.7. BirdMARK and FireFly Bird Flight Diverters

The BirdMARK BFD (Figure 2-11) is distributed by P&R Industries and is designed to securely grip wires up to 63.5 mm in diameter with a strong spring-loaded clamping jaw. P&R Industries also makes the BirdMARK BM-AG, a unit that is designed to glow in the dark up to 10 hours after sunset (Figure 2-12). The BirdMARK clamping jaw is used with several other P&R products designed specifically for power lines.



Figure 2-11. BirdMARK device.



Figure 2-12. BirdMARK BM AG flight diverter.

The BirdMARK can be installed and removed from the ground without interrupting power. The manufacturer claims the BirdMARK will stay in position even in a Force-8 gale. The swinging component is available in either orange or red-and-white. Power line markers were tested in a central North Dakota study from 2006 to 2008 and included the BirdMARK, SFD, and FireFly HW. Marking power lines bisecting open water resulted in a 28.9% reduction in the number of carcasses attributed to collision (Sporer et al. 2013). The advantage of the BirdMARK is that the swinging plate's movement makes a line more visible than simply increasing its profile. The BirdMARK's target-like appearance may result in increased vandalism.

2.8. FireFly FF Bird Flight Diverter – P&R Technologies

P&R Technologies also manufactures the FireFly, which is made from impact-resistant and UV-stabilized acrylic. The FireFly uses the same clamp as the BirdMARK but employs a rectangular plate with reflective and fluorescent marking tape (Figure 2-13 and Figure 2-14). The FireFly was tested at Staten Island, California and reduced avian collisions by 60% on a 12kV three-phase power line (Yee 2008). The diverters also reduced collisions at adjacent unmarked

buffer spans. In a Nebraska study of Sandhill Crane collisions, the FireFly diverter reduced bird collisions 33% to 50% on 69kV power lines (Murphy et al. 2009).

The manufacturer also produces the FireFly HW, a model with a non-swiveling plate, to minimize wear in high-wind areas (refer to Section 2.5 *FireFly High Wind (HW) Bird Diverter – P&R Technologies*). The manufacturer recommends using the HW model in areas with winds above 20 miles per hour.



Figure 2-13. FireFly during the day.



Figure 2-14. FireFly at night.

2.9. QuickMark Low Line Marker – P&R Technologies

The P&R Technologies QuickMark Low Line Marker is a lightweight Day-Glo orange plastic disk with a yellow center reflector that attaches with a SnapFast spring clamp and can be installed by hand or hot stick without interruption of power (Figure 2-15).

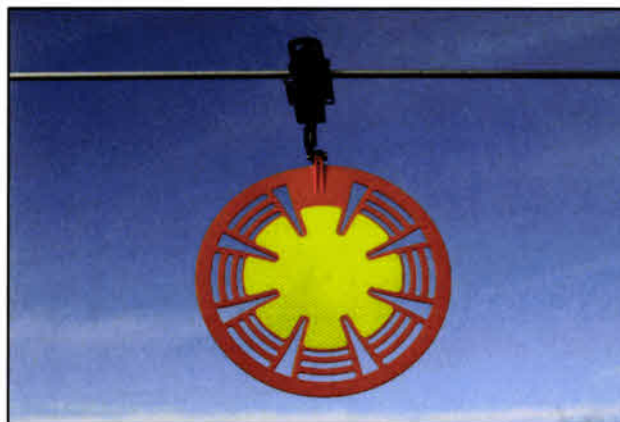


Figure 2-15. QuickMark Low Line Marker.

2.10. Raptor Clamp – Preformed Line Products

The Preformed Line Products Raptor Clamp Diverter is a high-impact, UV-stabilized PVC flapper paddle that attaches via a spring-loaded clamp (Figure 2-16). The Raptor Clamp Light-Emitting Diode (LED) Diverter is similar but incorporates a solar-powered flashing LED sealed in a high-impact encapsulated plastic closure above the flapper (Figure 2-17). The markers are lightweight and can be installed by hand or hot stick without interruption of power.

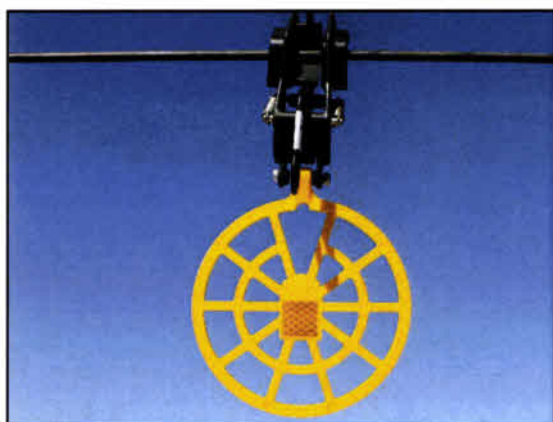


Figure 2-16. Raptor Clamp Diverter.



Figure 2-17. Raptor Clamp LED Diverter.

2.11. Overhead Warning Light Diverter – Preformed Line Products

The Preformed Line Products Overhead Warning Light (OWL) Diverter (Figure 2-18) uses PVC coils to attach to the line. The positive grip of the coils ensures that under aeolian vibration or other motion, the wire markers remain on the line where they were placed. The device is designed for species that fly at night, dawn, and dusk. The design incorporates features that increase the line's profile and has lighted moving components. The marker is lightweight and can be installed by hand or hot stick without interruption of power.



Figure 2-18. OWL Diverter designed for improved effectiveness in nocturnal and low-light situations.

Preformed Line Products, Eskom, and the Endangered Wildlife Trust (EWT) are testing a nocturnal wire-marking device using solar-powered LEDs. The LED devices have been installed in South Africa where, after a year of study, spans with the solar-powered LED marker had fewer collisions than spans marked with diurnal wire markers (EWT 2016).

2.12. Small Unmanned Aircraft System

A small UAS can be used to install line markers (Harness and Dwyer 2018). This approach can effectively install line markers at recommended spacing and may be less expensive than installation by helicopter, particularly on small jobs where mobilizing a helicopter to and from the site would constitute much of the expense of line marking (Figure 2-19). In one example, installation of line markers using a small UAS was projected to cost only 40% of the projected cost of installation by helicopter (Harness and Dwyer 2018). The approach also eliminates the need for manned aircraft operating near power lines, thereby eliminating the risk of human injury or fatality associated with accidents.

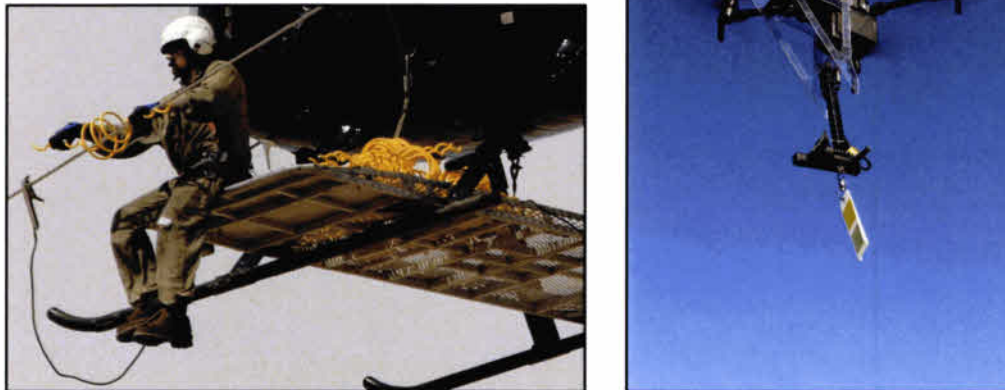


Figure 2-19. Installing markers using a helicopter versus using a small UAS.

2.13. Avian Collision Avoidance System

Hundreds of Sandhill Cranes die annually in collisions with marked power lines at the Iain Nicolson Audubon Center at Rowe Sanctuary (Rowe), a major migratory stopover location near Gibbon, Nebraska (Wright et al. 2009, Murphy et al. 2016a, Murphy et al. 2016b). Mitigation success has been limited because most collisions occur nocturnally when line markers are least visible, even though roughly half the line markers present include glow-in-the-dark stickers. To evaluate an alternative mitigation strategy at Rowe, EDM used a randomized design to test collision mitigation effects of a pole-mounted near-UV light (UV-A; 380-395 nanometer) ACAS to illuminate a 258-meter power line span crossing the Central Platte River (Figure 2-20) (Dwyer et al. 2019). EDM observed 48 Sandhill Crane collisions and 217 dangerous flights of Sandhill Crane flocks during 19 nights when the ACAS was off, but just 1 collision and 39 dangerous flights during 19 nights when the ACAS was on. Thus, EDM documented a 98% decrease in collisions and an 82% decrease in dangerous flights when the ACAS was on. EDM also found a 32% decrease in the number of evasive maneuvers initiated within 25 meters of the power line

along the river, and a 71% increase in the number of evasive maneuvers initiated beyond 25 meters when the ACAS was on. EDM concluded that Sandhill Cranes reacted sooner and with more control, and experienced substantially fewer collisions when the ACAS was on. Installation of the ACAS on other high-risk spans, and perhaps on other anthropogenic obstacles where birds collide, may offer a new solution to a long-running conservation dilemma (Dwyer et al. 2019). The ACAS is now being tested on a different power line in a different habitat, where different species are at high risk of collision. Though the details of ongoing testing are not available for inclusion in this report, preliminary analyses indicate a substantial reduction in avian collisions.

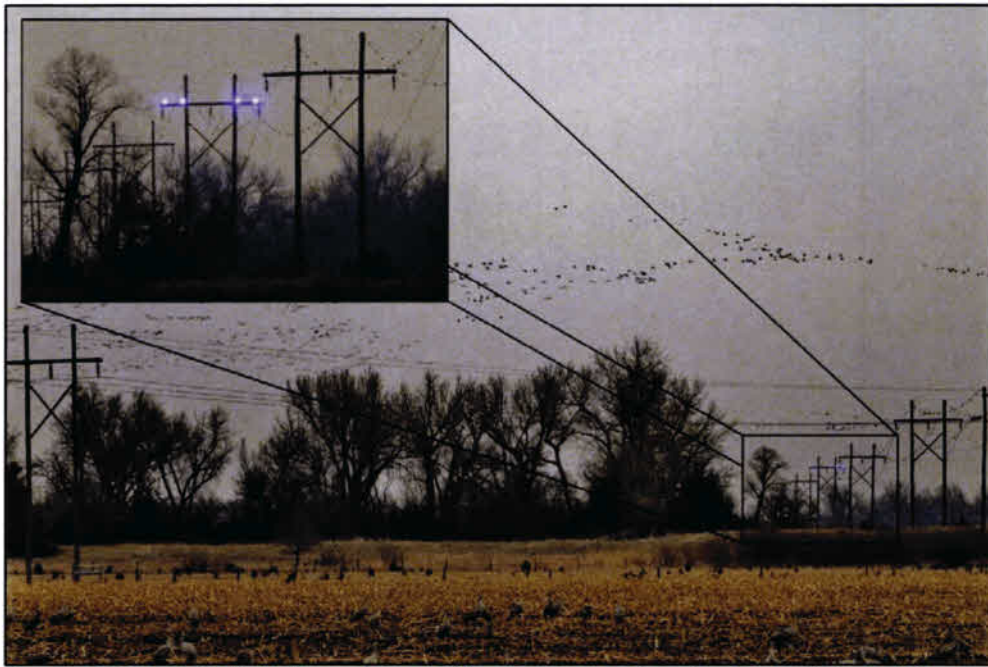


Figure 2-20. ACAS-illuminated power line span crossing the Central Platte River.

3. TASK 2 – AVIAN RISK

Overall, EDM concurs with the findings in the Plan of Development, Draft Environmental Impact Statement, Technical Environmental Summary, Draft BA, and other documents provided by DCRT. Specifically, EDM agrees that avian collision risk is minimal over the length of the Ten West Link Transmission Line because avian movements are likely to be minimal and agrees that collision risk is minimal for three federally protected species (Yellow-billed Cuckoo, Southwestern Willow Flycatcher, and Yuma Clapper Rail) where the line crosses potential habitats.

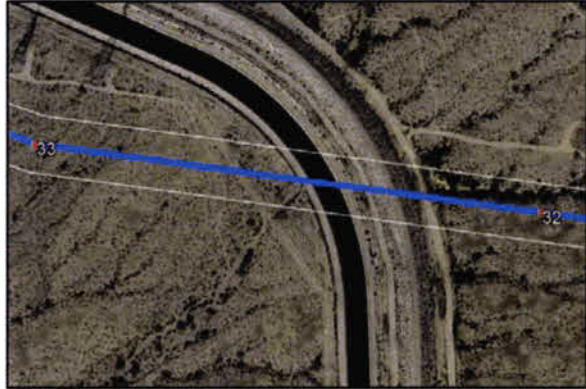
Given the information on collision risk available at this time, EDM does not believe that the ACAS is an appropriate mitigation strategy for any part of the DCRT. The ACAS is substantially more expensive and requires considerably greater long-term maintenance than traditional line marking. For these reasons, the ACAS is appropriate only in situations where collisions have been documented or are expected in large numbers.

EDM suggests that line markers be installed, instead—specifically at canal crossings between structures 16 and 17, 32 and 33, 89 and 90, 112 and 113, 129 and 130, and 133 and 135 (Figure 3-1). Collision risk at these locations may be slightly elevated above baseline risks elsewhere along the line if birds are moving along the canal waterway. It is not necessary to mark the entirety of each of these 500-meter-long spans. Instead, EDM recommends installing line markers on 100 meters of each of these spans, with the marked section centered on the centerline of the canal.

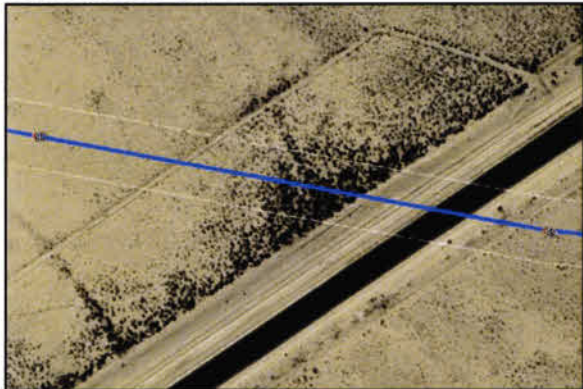
EDM also suggests line markers be installed in the spans between structures 343 and 392 to reduce collision risks along the Colorado River and in the agricultural fields west of the Colorado River (Figure 3-2). EDM recommends installation of FireFly HW line markers. These line markers in particular are recommended because they lack moving parts, so have lower maintenance needs than active line markers (which reduces initial purchase costs and maintenance costs), and because they can be installed via a small UAS. Initial installation may be most cost effective via helicopter given the approximately 13 miles to be marked; however, if additional line markers are later needed to replace damaged or missing units, those smaller tasks may be most efficiently accomplished using a small UAS.



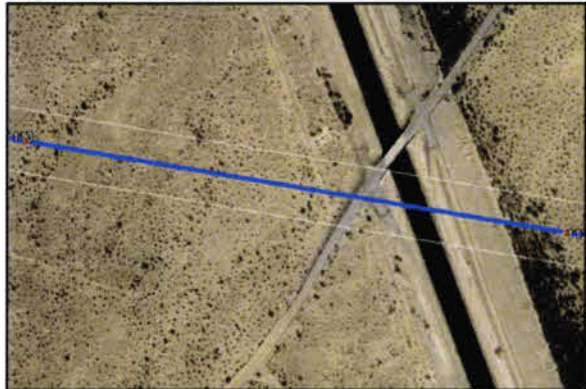
Structures 16 and 17.



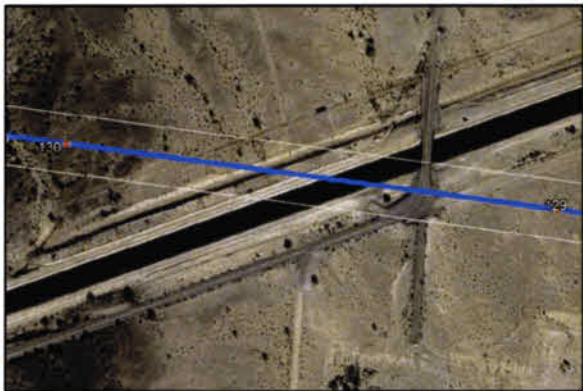
Structures 32 and 33.



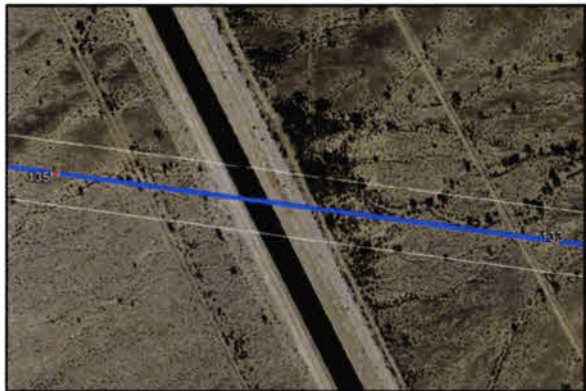
Structures 89 and 90.



Structures 112 and 113.



Structures 129 and 130.



Structures 133 and 135.

Figure 3-1. Recommended line marking at canal crossings.



Figure 3-2. Recommended line marking between structures 343 and 392.

4. LITERATURE CITED

- BARRIENTOS, R., J.C. ALONSO, C. PONCE, AND C. PALAĆIN. 2011. Meta-analysis of the effectiveness of marked wire in reducing avian collisions with power lines. *Conservation Biology* 25:893-903.
- BROWN, W.M., AND R.C. DREWEN. 1995. Evaluation of two power line markers to reduce crane and waterfowl collision mortality. *Wildlife Society Bulletin* 23:217-227.
- CROWDER, M.R. 2000. Assessment of devices designed to lower the incidence of avian power line strikes. M.S. Thesis, Purdue University, West Lafayette, IN.
- DWYER, J.F., A.K. PANDEY, L.A. MCHALE, AND R.E. HARNESS. 2019. Near-ultraviolet light reduced Sandhill Crane collisions with a power line by 98%. *The Condor: Ornithological Applications* 121:in press.
- ENDANGERED WILDLIFE TRUST (EWT). 2016. Mitigating collisions of night-flying birds on overhead power lines by means of a new product: the "OWL" nocturnal bird diverter. EWT report submitted to Eskom: Research Testing and Development, South Africa.
- HARNESS, R.E., AND J.F. DWYER. 2018. Automated collision marking system demonstration: technical report 3002013607. Electric Power Research Institute (EPRI), Washington, D.C.
- MORKILL, A.E., AND S.H. ANDERSON. 1991. Effectiveness of marking powerlines to reduce Sandhill Crane collisions. *Wildlife Society Bulletin* 19:442-449.
- MURPHY, R.K., S.M. MCPHERRON, G.D. WRIGHT, AND K.L. SERBOUSEK. 2009. Effectiveness of avian collision averters in preventing migratory bird mortality from powerline strikes in the Central Platte River, Nebraska. 2008-2009 Final Report. Department of Biology, University of Nebraska-Kearney, Kearney, NE.
- MURPHY, R.K., J.F. DWYER, E.K. MOJICA, M.M. MCPHERRON, AND R.E. HARNESS. 2016a. Reactions of Sandhill Cranes approaching a marked transmission power line. *Journal of Fish and Wildlife Management* 7:480-489.
- MURPHY, R.K., E.K. MOJICA, J.F. DWYER, M.M. MCPHERRON, G.D. WRIGHT, R.E. HARNESS, A.K. PANDEY, AND K.L. SERBOUSEK. 2016b. Crippling and nocturnal biases in a study of Sandhill Crane (*Grus canadensis*) collisions with a transmission line. *Waterbirds* 39:312-317.
- SPORER, M.K., J.F. DWYER, B.D. GERBER, R.E. HARNESS, AND A.K. PANDEY. 2013. Marking power lines to reduce avian collisions near the Audubon National Wildlife Refuge, North Dakota. *Wildlife Society Bulletin* 37:796-804.

- VAN ROOYEN, C. 2000. Endangered Wildlife Trust, South Africa. Personal communication with R. Harness, EDM International, Inc.
- WRIGHT, G.D., T.J. SMITH, R.K. MURPHY, J.R. RUNGE, AND R.R. HARMS. 2009. Mortality of cranes (Gruidae) associated with powerlines over a major roost on the Platte River, Nebraska. *Prairie Naturalist* 41:116-120.
- YEE, M.L. 2008. Testing the effectiveness of an avian flight diverter for reducing avian collisions with distribution power lines in the Sacramento Valley, California. California Energy Commission, Public Interest Energy Research (PIER) Program. CEC-500-2007-122.

Exhibit B-2

**USFWS
Letter of
Concurrence**



**United States Department of the Interior
Fish and Wildlife Service**

Arizona Ecological Services Office

9828 North 31st Avenue, Suite C3

Phoenix, Arizona 85051

Telephone: (602) 242-0210 Fax: (602) 242-2513



In reply refer to:

AESO/SE

02EAAZ00-2019-I-0699

July 29, 2019

Memorandum

To: Aron King, Yuma Field Office Manager

From: Jeffrey A. Humphrey, Field Supervisor

Subject: Ten West Link Transmission Line Project, Blythe, California to Tonopah Arizona

Thank you for your June 19, 2019, correspondence received electronically on the same day. This letter documents our review of the Ten West Transmission Line Project that will occur through parts of Maricopa and La Paz counties in Arizona (AZ) and then into Riverside County in California (CA) in compliance with section 7 of the Endangered Species Act of 1973 (ESA) as amended (16 U.S.C. 1531 et seq.).

Your letter concluded that the proposed project may affect, but is not likely to adversely affect the threatened Sonoran pronghorn (*Antilocapra americana sonoriensis*); the endangered southwestern willow flycatcher (*Empidonax traillii extimus*; flycatcher); the endangered Yuma Ridgway's (clapper) rail (*Rallus longirostris [obsoletus] yumanensis*; rail); the threatened western yellow-billed cuckoo (*Coccyzus americanus occidentalis*; cuckoo) or its proposed critical habitat; the endangered bonytail chub (*Gila elegans*); and the endangered razorback sucker (*Xyrauchen texanus*) or its designated critical habitat. You also concluded that the proposed project is not likely to jeopardize the nonessential experimental (10j) population of the Sonoran pronghorn. We concur with your determinations and provide our rationales below.

In addition, you determined that the proposed project may affect, but is likely to adversely affect the federally threatened Mojave Desert tortoise (*Gopherus agassizii*; desert tortoise). Desert tortoise critical habitat does not occur within the action area. The U.S. Fish and Wildlife Service (FWS) in CA issued a programmatic biological opinion (FWS-KRN/SBD/INY/LA/IMP/RIV-17B0532-17F1029; USFWS 2017) to the California Bureau of Land Management (BLM) Desert District addressing activities considered within this proposed action and its effects to desert tortoise. Therefore, the BLM has submitted to the Palm Springs Fish and Wildlife Service (PSESO) a desert tortoise activity form with conservation measures to avoid and minimize effects (Appendix A). Because the BLM and PSESO are addressing the desert tortoise in the BLM Desert District's programmatic biological opinion, we will not address desert tortoise further in this concurrence.

The effects of the proposed action may occur both within and outside the Sonoran pronghorn's non-essential experimental (10j) range. Within the nonessential experimental population 10(j) range, pronghorn are, for section 7 consultation purposes, treated as a species proposed to be listed. The proposed project, however, is also adjacent to the Kofa National Wildlife Refuge (NWR), where Sonoran pronghorn¹ are treated as a threatened species for section 7 purposes.

DESCRIPTION OF THE PROPOSED ACTION

A complete description of the proposed action occurs in your June 19, 2019, biological assessment (BA) (BLM 2019) and the accompanying maps and field notes sent to our office electronically the same day. A full administrative record for this project can be found in the Arizona Ecological Services Office (AESO) and is available on request.

The Ten West Transmission Line includes the issuance of a 200-foot-wide right of way (ROW) to allow for the construction, operation, and maintenance of the proposed 125 mile 500 kilovolt (kV) line from Tonopah, AZ, to Blythe, CA, to DCR Transmissions (DCRT) LLC (Appendix B; Figure 1). The route crosses lands managed by the BLM, Bureau of Reclamation, Department of Defense, and Arizona State Land Department, in addition to private property. The route avoids the Kofa NWR (it will come within 182 meters [600 feet] of the NWR boundary at its closest point), as well as other areas of concern (Appendix B; Figure 2a and 2b). The route will parallel the existing Devers to Palo Verde No. 1 (DPV1) 500 kV transmission line and other linear facilities including the Central Arizona Project canal north of Interstate 10 (I-10) for about 20 miles, before crossing south to parallel the I-10 corridor for approximately 42 miles before crossing south again to go west through the La Posa Plain and Dome Rock Mountains for 35 miles. From there the line will cross the Colorado River 5 miles south of Blythe, and transverse 11 miles of agricultural land in Palo Verde Valley in CA, and then for a remaining 10 miles will run along the Palo Verde Mesa to the Colorado River Substation.

The transmission line will include an estimated 426 structures (3 to 8 per mile) and will include steel lattice towers as well as monopoles. These structures will maintain as consistent height as possible but will range between 72 and 195 feet tall. The majority of these structures will be below 130 feet tall. The distance between towers will vary between 600 and 2,100 feet depending on the terrain. The typical span will be about 1,200 feet long. For each structure installed, approximately 1.1 acres of ROW will be disturbed, totaling an estimated 758 acres of temporarily disturbed ROW land. Following construction, these temporarily disturbed ROW

¹ From USFWS 2011 (Final rule for the establishment of a nonessential experimental population of Sonoran Pronghorn in southwestern Arizona): When nonessential experimental populations (NEP) are located outside a NWR or National Park Service unit, for the purposes of section 7 we treat the population as proposed for listing and only two provisions of section 7 apply—section 7(a)(1) and section 7(a)(4). In these instances, NEPs provide additional flexibility because Federal agencies are not required to consult with us under section 7(a)(2). Section 7(a)(4) requires Federal agencies to confer (rather than consult) with the USFWS on actions that are likely to jeopardize the continued existence of a species proposed to be listed. The results of a conference are in the form of conservation recommendations that are optional as the agencies carry out, fund, or authorize activities. Because the nonessential experimental population is, by definition, not essential to the continued existence of the species then the effects of proposed actions on the NEP will generally not rise to the level of jeopardizing the continued existence of the species. As a result, a formal conference will likely never be required for Sonoran pronghorn established within the nonessential experimental population area. Nonetheless, some agencies voluntarily confer with the Service on actions that may affect a proposed species.

lands will be reclaimed and not disturbed further. The remaining ROW would be maintained as access roads to conduct transmission line maintenance.

Construction and decommissioning of the transmission line will each take approximately two years to complete (the overall proposed project length is 50 years). Installation for each individual structure will take approximately a month and a half. Each structure requires a variety of tasks including: geotechnical investigation (1 to 2 days), access roads (as needed) and the establishment of the work area pad (1 day), laying of the structure foundation (3 to 6 days), structure installation (2 to 7 days), and stringing a section of line (6 days), there will also be the establishment of four staging yards (1 to 2 weeks). Decommissioning each structure and site rehabilitation will take between one and two days (Table 3, BLM 2019).

Materials used for construction, installation, and decommissioning include but are not limited to drill trucks, 2/30/40/75/100-ton cranes, bulldozer, grader, chainsaw, front-end loaders, wagon drills, drum puller, boom truck, and potentially a helicopter. Intensity (noise and habitat impact) will vary for each stage of installation and decommission. The establishment of the staging yards, development of any access roads, structure area development, structure foundation construction, the stringing of the cable, and site reclamation will all likely have moderate to high noise and habitat impacts.

Throughout the operation of the project (50 years) the transmission line will be patrolled and inspected annually by crews with a small number of trucks as well as by helicopter or airplane. Road maintenance will occur as needed to support those patrols and inspections and could include blading, ditching, culvert installation, and surfacing. Other maintenance activities could include replacing collision diverters on the line, clearing of any vegetation in access roads, repair of lines, etc. In addition to scheduled patrols and repairs, unexpected maintenance and repairs will occur as needed. Both scheduled and unscheduled repairs and maintenance will generally use the same processes and equipment used during construction. If a site is disturbed it will be reclaimed according to the project requirements.

The Ten West Transmission Line action area is a half mile wide on either side of the transmission line, except within the La Posa Plain area near the Kofa NWR, where it extends to the east of the right-of-way to encompass approximately 1,125 acres on the Kofa NWR within one mile of the right-of-way to account for Sonoran pronghorn on the Kofa NWR (See Figures 2a and 2b). The action area is larger due to proximity of the project to the Kofa NWR and to account for impacts in this area because pronghorn are sensitive to aircraft, human activity, vehicles, and associated noise. The overall action area includes locations where the proposed action may affect fully listed Sonoran Pronghorn (within the Kofa NWR) and areas where only non-essential experimental 10(j) Sonoran pronghorn may be affected (outside the Kofa NWR boundary). The line also crosses Colorado River and nearby agricultural areas used by listed and non-listed avian species.

Conservation Measures

The proposed action includes the following species-specific conservation measures to avoid and minimize potential effects to Sonoran pronghorn and federally listed fish and avian species. The BLM, Arizona Fish and Game Department (AGFD), California Department of Fish and Wildlife,

FWS, and the Applicant developed conservation measures as part of the proposed action.

Sonoran Pronghorn (the following measures will apply to project construction, maintenance, and decommissioning activities when Sonoran pronghorn are present within the action area on Kofa NWR (i.e. northwestern most corner):

- A coordination meeting with the BLM Field Office, Kofa NWR, and AGFD will occur prior to any construction, scheduled maintenance, or other project activities within 1 mile of the Kofa NWR (other than driving on existing roads during inspection activities), to become informed of Sonoran pronghorn use in the area. If Sonoran pronghorn are known to occur on the action area on the Kofa NWR at the time of the proposed construction, scheduled maintenance or other project activities, then no project construction or scheduled maintenance activities will be conducted until pronghorn on the Kofa NWR are no longer within 1 mile of project activities.
- Biological monitors will search for Sonoran pronghorn while accompanying construction crews and crews doing scheduled maintenance and repair work in southern La Posa Plain. If a biological monitor observes Sonoran pronghorn within the action area on the Kofa NWR, all work within 1 mile of those animals will stop as soon as safely possible and will not restart until the pronghorn move away from the activities. If pronghorn are detected during project activities, the BLM and/or project proponent (DCRT) will notify the Arizona Ecological Services FWS Office (AESO) and the Kofa NWR as soon as possible, but within 48 hours.
- No construction or scheduled maintenance activities within 1 mile of the Kofa NWR, other than driving on existing roads during scheduled inspections, will occur during the fawning season of February 1 to July 15 when pronghorn are present within the action area on the Kofa NWR.
- Unscheduled maintenance work will not occur within 1 mile of the Kofa NWR during the pronghorn fawning season of February to July 15 when pronghorn are present within the action area on the Kofa NWR when possible.
- The BLM Field Office and DCRT will schedule an annual coordination meeting with the Kofa NWR and AGFD prior to construction and scheduled maintenance activities. The annual coordination meeting will provide information on activities for that year that need to be completed and will provide the agencies with an opportunity to present any new information on Sonoran pronghorn use along or near the TWL transmission line.
- The BLM with DCRT will prepare an annual report and provide it to the Kofa NWR, AESO, PSESO, and AGFD. The report will include information on construction and scheduled maintenance activities that occurred within 1 mile of the Kofa NWR, timing of those activities, documentation of coordination with the agencies, identification of any BMPs that were implemented, and documentation of observations and monitoring efforts during activities.
- Vehicular travel would be limited to established roads to the maximum extent practicable. All drivers will obey posted speed limits and be restricted to 15 miles-per-hour on constructed access roads.
- To the extent feasible, stationary noise sources that exceed background ambient noise levels will be located away from known or likely locations of Sonoran pronghorn and its habitat.

Razorback Sucker and Bonytail Chub

- Work will not occur within nearby backwaters or within the mainstem of the Colorado River channel.
- A Spill Control Plan will be implemented to minimize the risk of releases of contaminating materials into the Colorado River. The plan will prohibit the fueling of vehicles or storage of hazardous materials in floodplains or ephemeral stream channels.
- Following construction, work areas and temporary access roads will be revegetated to minimize erosion and sediment runoff during operation of the line.
- If erosion exceeds the criteria described in the Spill Prevention, Control and Countermeasures Plan a sediment and erosion control device will be installed.
- A Stormwater Pollution Prevention Plan will be prepared and implemented to control and minimize sediment runoff from access roads and work areas.

Southwestern Willow Flycatcher, Yellow-Billed Cuckoo, and Yuma Ridgway's Rail

- Due to EDM International Inc.'s (consultants specializing in transmission line/wildlife conflicts) recommendation, shield wires (thinner wires on the tops of transmission lines and less likely to be seen by migrating/flying birds) will be marked at 10-meter intervals for the following segments of the power line (spans) (Figure 3-1 and Figure 3-2, Appendix B, BLM 2019):
 - Across and near the Colorado River and adjacent floodplain (structures 343 to 352) for total distance of 1.4 miles.
 - Across agricultural fields in California between structures 352-392 for a total distance of 11 miles.
 - At six locations in Arizona where the transmission line will cross the Central Arizona Project canal. At each canal crossing line markers will be placed along a 100-meter section of the line which will be centered on the canal.
- Following EDM International's recommendation, the shield wires will be marked with Firefly High Wind (HW) markers. These markers reduce avian collision impacts by 60% (Yee 2008). Firefly HW markers are reflective, creating a "sparkle effect" for diurnal birds. These markers also have a luminescent plate that emits visible light for up to 12 hours, reducing wire collision for nighttime migrating birds.
- Firefly HW marker presence and function will be annually monitored post-construction for the 50-year lifetime of the right-of-way to ensure that markers are present, not damaged, and functioning properly. They will be replaced within 30 days of inspection if found to be damaged or not functioning properly. DCRT will develop a plan that will include how and when markers will be monitored
- The conductors and other wires on the Ten West Transmission Line will be configured to match the height of the existing Devers-Palo Verde transmission line to minimize collisions for migrating birds flying at a steady elevation over long distances.
- A post-construction avian collision-monitoring plan will be developed and implemented to survey under higher risk transmission lines crossing the Colorado River floodplain and agricultural fields (landowner permission pending). Avian collision monitoring will occur annually (duration yet to be determined) during migration periods to assess effectiveness and reported annually to the BLM and FWS.

- BLM with input from FWS will create triggers (including surrogate species as described below) to both change/improve avian collision avoidance markers and reinitiate consultation.
- Triggers to change/improve effectiveness of collision markers (without reinitiation) may include timing, frequency, and abundance of detected avian collisions and/or surrogate avian species or avian families (i.e. *Tyrannidae*, *Cuculidae*, and/or *Rallidae*). BLM will work with EDM International and FWS to develop and implement a different avian collision prevention marking system. For example, EDM International used a prototype UV light device that reduced nocturnal migrating sandhill crane (*Grus canadensis*) collisions by 98%.
- Triggers to reinitiate consultation will include any listed avian species that collides with the Ten West Transmission Line or collision levels reached associated with surrogate species agreed upon by BLM and FWS in the monitoring plan.

DETERMINATION OF EFFECTS

We concur with your determination that the proposed action may affect, but is not likely to adversely affect the Sonoran pronghorn, yellow-billed cuckoo (and proposed critical habitat), southwestern willow flycatcher, Yuma Ridgway's rail, bonytail chub, and razorback sucker (and designated critical habitat) for the following reasons:

Sonoran pronghorn

- Because the following measures will be implemented to avoid and minimize effects to Sonoran pronghorn (including pronghorn fawning from February 1 to July 15) on the Kofa NWR, potential effects from noise or visual disturbance from project construction, scheduled maintenance, and decommissioning are discountable:
 - Project activities (construction, installation, maintenance, and decommissioning) will occur following coordination with the Kofa NWR and AGFD to prevent/reduce adverse effects to Sonoran pronghorn. Coordination will determine where pronghorn occur or could likely be in order to conduct activities when pronghorn are outside of the 1-mile Kofa NWR buffer.
 - A biological surveyor will be on each crew working (during project construction, maintenance, and decommissioning) in the southern La Posa Plain area monitoring for pronghorn.
 - No project construction, installation, scheduled maintenance, decommissioning, or other activities will be conducted until pronghorn on the Kofa NWR are no longer within 1 mile of project activities.
 - Construction, installation, maintenance, and decommissioning activities will pause if pronghorn on Kofa NWR are detected within the 1-mile buffer and can resume when pronghorn move outside of the 1-mile buffer.
 - Only slow-moving (15 miles-per-hour) inspection vehicles will occur on existing access roads within 1 mile of Kofa NWR during the Sonoran pronghorn fawning season (February 1 to July 15).
- Sonoran pronghorn may use Kofa NWR within the action area, but because unscheduled maintenance work is expected to be infrequent, we anticipate that noise or visual disturbance effects to Kofa NWR pronghorn will be insignificant and discountable.

While Sonoran pronghorn can travel about 10 miles a day for resources, pronghorn typically occur on the Kofa NWR 20 to 40 miles away from the Ten West Transmission Line ROW. There is also a lack of water near the action area to attract pronghorn, making it less likely pronghorn will use the Kofa NWR within the one-mile buffer in relative proximity to the Ten West Transmission Line. Should unscheduled maintenance occur more frequently than anticipated or if pronghorn use the northwestern corner of the Kofa NWR more frequently than anticipated, then coordination (per required coordination meetings) will ensure that potential effects, not considered in this consultation, are discussed and consultation is reinitiated if warranted.

- Because the Ten West Transmission Line construction, installation, maintenance, and decommissioning activities will not alter, damage, or remove Sonoran pronghorn habitat on the Kofa NWR, effects to Sonoran pronghorn habitat on the refuge are discountable.

Razorback Sucker and Bonytail Chub

- There will be no construction, installation, maintenance, or decommissioning instream work, no work within any backwaters, and tower installation/decommissioning locations will be relatively small and localized to 1-2 acre sites. Therefore, due to the location, distance and small size of work areas, direct effects to any razorback suckers or bonytail chub will be discountable.
- The Spill Prevention Plan and Pollution Prevention Plan will ensure that hazardous materials and work area created erosion do not enter rivers or backwaters. The Spill Prevention Plans will add an immeasurable amount of sediment to natural runoff. Therefore, we anticipate any water quality or pollution effects to the razorback sucker and bonytail chub will be insignificant and discountable.
- No work areas will occur immediately adjacent to the Colorado River and any construction lights will be pointed down and shielded to prevent disturbance to photo sensitive fish larvae. Both of these factors will make any effect from lighting insignificant and discountable to razorback sucker or bonytail chub.
- Because there will be no instream work, installation/decommissioning locations are 1-2 acre off channel sites, and hazardous materials management and erosion control measures will be implemented, effects to all razorback sucker critical habitat primary constituent elements (water, physical habitat, and biological environment) will be insignificant and discountable.

Southwestern Willow Flycatcher, Yellow-Billed Cuckoo, and Yuma Ridgway's Rail

- There is no suitable nesting flycatcher, rail, or cuckoo habitat in the action area, nor is there any expectation, due to river regulation and transmission lines crossing miles of open desert, that riparian or emergent vegetation nesting habitat will develop in the action area prior to construction/installation or during maintenance/decommissioning. Therefore, any construction, installation, maintenance, or decommissioning related direct or indirect effects to nesting flycatchers, cuckoos, rails and its habitat are anticipated to be discountable.
- Any construction, installation, maintenance, or decommissioning related noise or human activity that could alter behavior of migrating flycatchers, rails, or cuckoos is expected to be insignificant. Construction/installation and decommissioning will occur at localized 1-2 acre sites and maintenance actions will be site-specific, limiting the area of human

activity and noise. Any migrating flycatcher, cuckoo, or rail disrupted due to construction, installation, maintenance, or decommissioning activities is expected to quickly find alternate nearby habitat for food or shelter.

- No flycatchers, rails, or cuckoos collision fatalities have been documented from transmission lines or associated structures crossing the lower Colorado River. All three listed birds migrate along the Colorado River, and due to their relative rarity, are a small component of the overall 400 bird species migrating along the lower Colorado River (Rosenberg et al. 1991). Firefly HW markers installed and maintained at high-risk areas (rivers and agricultural fields) along the transmission line will provide illumination to alert nighttime migrating flycatchers, cuckoos, and rails of potential collision hazard. Yee (2008) found Firefly HW markers reduced avian collision by 60 percent and Murphy et al. (2009) recorded increased sandhill crane awareness and avoidance behavior at a Firefly HW marked transmission line.

Due to the lack of documented Colorado River collision/fatalities for these three listed bird species and their small proportion of the overall migrating lower Colorado River avian community, combined with the increased visibility of Firefly HW markers to prevent collisions, we anticipate direct effects to flycatchers, rails, and cuckoos are so unlikely as to be discountable.

- To gauge Firefly HW marker effectiveness in preventing/reducing avian collisions, annual monitoring will occur during bird migration. Monitoring will occur under transmission line segments on either side of the Colorado River and in agricultural fields (landowner permission pending). If more than the (yet to be) agreed upon frequency or abundance of avian surrogate species or families (such as the flycatcher's *Tyrannidae*) are found, EDM International will design and BLM and DCRT will implement an alternate marking system intended to reduce avian collisions. Implementing these avian monitoring and collision reduction strategies further supports the BLM's "may affect not likely to adversely affect determination" and our concurrence. Effectiveness monitoring of avian collision markers will also determine if listed species are adversely affected or if surrogate species/family avian collision triggers are met requiring consultation reinitiation.

Yellow-billed Cuckoo Proposed Critical Habitat

- Because the three 1-2 acre construction, installation, maintenance, and decommissioning sites and access roads near the Colorado River are individually and collectively relatively small in size; consist of unsuitable nesting cuckoo habitat (scattered tamarisk trees, salt bush, various small shrubs, and open spaces); and are disconnected from the Colorado River due to river regulation, habitat alteration is expected to have an overall insignificant effect to the riparian woodlands and insect population primary constituent elements (PCE 1 and 2).
- Construction, installation, maintenance, and decommissioning of the Ten West Transmission line towers are not expected to alter or have any influence on dynamic river processes (PCE 3) due to the transmission tower's location away from the river channel and existing dams along the river.

We appreciate the BLM's threatened and endangered species conservation efforts and encourage continued effort toward reducing effects to listed avian species from power line (transmission, distribution) collisions. Since the late 1970s, there has been a growing awareness of avian collision with power lines (APLIC 2012). As more power lines are built across the landscape, collision risk is anticipated to increase (APLIC 2012). Bernardino et al. (2018), described transmission and distribution electricity grids are expanding rapidly worldwide, with significant negative impacts to birds (currently killing worldwide hundreds of thousands to millions of birds every year). As of 2012, APLIC identified there is no organized attempt to understand the extent and magnitude of collision mortality and existing knowledge is based mostly on local known lines with collision problems. Further challenges exist because avian/power line collision risk is not uniformly distributed and likely dependent on species and habitat variables (APLIC 2012). It is important to continuously improve siting and route selection, impact assessment methods, mitigation measures for new and existing power lines, and effectiveness studies of line marking devices (APLIC 2012 and Bernardino et al. 2018). Bernardino et al. (2018) also identified a wide range of avian collision risk factors to consider (mentioning they can be interconnected), grouped into three categories: species-specific, site-specific and power-line specific. Bernardino et al. (2018) encouraged the implementation and study of new and innovative technology that can possibly reduce bird collisions (i.e. UV lighting) and alert managers of avian collision issues (i.e. bird strike indicators).

Project activities may affect species protected under the Migratory Bird Treaty Act (MBTA) of 1918, as amended (16 U.S.C. sec. 703-712) and/or bald and golden eagles protected under the Bald and Golden Eagle Protection Act (Eagle Act). The MBTA prohibits the intentional taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when authorized by the FWS. The Eagle Act prohibits anyone, without a FWS permit, from taking (including disturbing) eagles, and including their parts, nests, or eggs. If you think migratory birds and/or eagles will be affected by this project, we recommend seeking our Technical Assistance to identify available conservation measures that you may be able to incorporate into your project.

For more information regarding the MBTA and Eagle Act, please visit the following websites. More information on the MBTA and available permits can be retrieved from [FWS Migratory Bird Program web page](#) and [FWS Permits Application Forms](#). For information on protections for bald eagles, please refer to the FWS's National Bald Eagle Management Guidelines (72 FR 31156) and regulatory definition of the term "disturb" (72 FR 31132) published in the Federal Register on June 5, as well at the Conservation Assessment and Strategy for the Bald Eagle in Arizona ([Southwestern Bald Eagle Management Committee website](#)).

In keeping with our trust responsibilities to American Indian Tribes, by copy of this letter we are notifying Tribes that may be affected by this proposed action and encourage you to invite the Bureau of Indian Affairs to participate in the review of your proposed action. We also encourage you to coordinate the review of this project with the Arizona Game and Fish Department, and California Department of Fish and Wildlife. Thank you for your continued coordination. No further section 7 consultation is required for this project at this time. Should project plans change, or if information on the distribution or abundance of listed species or critical habitat becomes available, this determination may need to be reconsidered. In all future correspondence on this project, please refer to consultation number 02EAZZ00-2019-I-0699.

If you require further assistance or you have any questions, please contact Nichole Engelmann or Greg Beatty at 602-242-0210.

Sincerely,



Jeffrey A. Humphrey

cc (electronic):

Chief, Habitat Branch, Arizona Game and Fish Department, Phoenix, AZ
 Assistant Field Supervisor, Fish and Wildlife Service, Phoenix, and Tucson (Attn: Jessica Gwinn, Greg Beatty, Susan Sferra, Erin Fernandez).
 Biologist, Migratory Birds Program, U.S. Fish and Wildlife Service, Albuquerque, NM (Attn: Kristin Madden).
 Assistant Field Supervisor, Fish and Wildlife Service, Carlsbad, and Palm Springs (Attn: Ken Corey, Jenness McBride, and Vincent James)
 Assistant District Manager, Bureau of Land Management, Moreno Valley, CA 92553 (Attn: Greg Miller and Mark Massar)
 State Biologist, Bureau of Land Management, Phoenix, AZ (Attn: Phillip Cooley).
 Fish and Wildlife Program, Bureau of Land Management, Phoenix, AZ (Attn: Elroy Masters)
 Wildlife Biologist, Bureau of Land Management Renewable Energy Program, Phoenix, AZ (Attn: Codey Carter).
 Environmental Specialist, California Department of Fish and Wildlife, Blythe, CA (Attn: Richard Kim).

Tribes:

Environmental Coordinator, Bureau of Indian Affairs, Phoenix, AZ (Attn: Chip Lewis)
 Director, Western Regional Office, Bureau of Indian Affairs, Phoenix, AZ (Attn: Bryan Bowker)
 Manager, Environmental Protection Department, Yavapai-Apache Nation, Camp Verde, AZ (Attn: David Lewis)
 Director, Environmental Program, Yavapai Prescott-Indian Tribe, Prescott, AZ (Attn: Amber Tyson)
 Director, Environmental Program, Quechan Tribe, Yuma, AZ (Attn: Chase Choate)
 Director, Cultural Resources Department, Salt River Pima-Maricopa Indian Community, Scottsdale, AZ (Attn: Kelly Washington)
 Director, Environmental Quality, Gila River Indian Community, Sacaton, AZ
 Director, Environmental Protection, Ak Chin Indian Community, Maricopa, AZ (Attn: Brenda Ball)
 Director, Natural Resources Department, Tohono O'odham Nation, Sells, AZ (Attn: Marlakay Henry)
 Director, Natural Resources Department, Hopi Tribe, Kykotsmovi, AZ (Attn: Clayton Honyumptewa)

Director, Environmental Protection, Fort Mojave Indian Tribe, Mohave Valley, AZ (Attn: Luke Johnson)
 Director, Environmental Protection Office, Colorado River Indian Tribes, Parker, AZ (Attn: Wilfred Nabahe, Director)

LITERATURE CITED

- Avian Power Line Interaction Committee (APLIC). 2012. "Reducing Avian Collisions with Power Lines: The State of the Art in 2012." Edison Electric Institute and APLIC. Washington, D.C.
- Bernardino, J., et al. "Bird collisions with power lines: State of the art and priority areas for research." *Biological conservation* 222 (2018): 1-13.
- Bureau of Land Management (BLM). 2019. Final Biological Assessment for the Ten West Link Transmission Line Project. Dated June 19. Phoenix, Arizona.
- Murphy, Robert K., et al. 2009. "Effectiveness of avian collision averters in preventing migratory bird mortality from powerline strikes in the central Platte River, Nebraska." Final Report to the U.S. Fish and Wildlife Service, Grand Island, Nebraska, USA (2009).
- U.S. Fish and Wildlife Service (USFWS). 2011. Endangered and Threatened Wildlife and Plants: Establishment of a Nonessential Experimental Populaton of Sonoran Pronghorn in Southwestern Arizona. Final Rule. Federal Register 76(87):25593-25611.
- U.S. Fish and Wildlife Service (USFWS). 2017. Biological opinion for activities in the California Desert Conservation Area. Dated September 1. Memorandum to District Manager, California Desert District Office, Bureau of Land Management, Moreno Valley, California. From Field Supervisor, Carlsbad Fish and Wildlife Office. Carlsbad, California.
- Yee, M.L. 2008. Testing the effectiveness of an avian flight diverter for reducing avian collisions with distribution power lines in Sacramento Valley, California. California Energy Commission, Public Interest Energy Research (PIER) Program. CEC-500-2007-122.

APPENDIX A-ACTIVITY FORM FOR PROGRAMMATIC BIOLOGICAL OPINION

The BLM submitted the Activity Request Form (below) to the FWS's PSESO on June 16, 2019, to address 10 West Transmission Line effects to the Sonoran Desert tortoise under an existing programmatic biological opinion (FWS-KRN/SBD/INY/LA/IMP/RIV-17B0532-17F10290). In order to represent the Activity Form fully and insert it into this document, it was necessary to make formatting changes.

Activity Request Form

This consultation consists of the programmatic biological opinion, the Bureau of Land Management's (Bureau) request to use the programmatic biological opinion for the proposed action with project-specific information (Part A), the Fish and Wildlife Service's (Service) response (Part B), and the Bureau's post-project reporting (Part C). This form will be filled out and sent electronically. If your response to any question does not fit in the fillable box, please add extra pages and note the additional pages in the box.

For projects that affect 10 acres of habitat or less or that do not involve ongoing impacts to desert tortoises that are associated with transportation, the Service's Division Chief will have 30 days to respond via electronic mail if she or he has any concerns with use of the programmatic biological opinion. The Bureau may assume that the Service has no concerns if it does not respond by the close of the 30-day period; as a courtesy, the Service's Division Chief will attempt to notify the Bureau of her or his decision as soon as possible.

For projects that affect more than 10 acres or that will involve ongoing impacts to desert tortoises that are associated with transportation, the Service's Division Chief will respond within 30 days by signing and returning the activity form via electronic mail. The Bureau will not authorize or implement such projects until it receives notification from the Service.

PART A: REQUEST TO IMPLEMENT AN ACTIVITY BY THE BUREAU

Date of request from Bureau: 06/19/2019

Bureau point of contact: Mark Massar

Phone number/e-mail: mmassar@blm.gov / 760-833-7121

Project/activity title: Ten West Link Transmission Line Project

Proponent/applicant: DCR Transmission, LLC

Number of desert tortoises potentially impacted:

<180 mm: 1

>180 mm: 1

Number of acres anticipated to be affected:

Non-critical habitat: 125

Critical habitat: none

Description of Proposed Action

Attached a map of the action area to form: Yes

What is the Federal action (*e.g.* right-of-way, permit, lease, etc.): Rights of way

When would the action begin: 11/01/2020

When would the action end: 01/01/2072

What are the specific activities that would be implemented: See Biological Assessment.

How will access to work areas be accomplished? List equipment and routes of travel

Primary access to the transmission line on Palo Verde Mesa will be via either the access road to the Colorado River Substation (west side) or the 22nd Avenue and Power Line Road (east side). Access to structures and work areas in that area will be from a series of existing roads and new roads, including numerous spur roads into structure work areas.

List proposed Conservation and Management Actions:

See the Biological Assessment Appendix A for a complete list of conservation and management actions.

- A worker education program that meets the approval of the BLM will be implemented. The program will be carried out during all phases of the project (site mobilization, ground disturbance, grading, construction, operation, closure/decommissioning or project abandonment, and restoration/reclamation activities). The worker education program will provide interpretation for non-English speaking workers, and provide the same instruction for new workers prior to their working on site. As appropriate based on the activity, the program will contain information about: 1. Site-specific biological and non-biological resources. 2. Information on the legal protection for protected resources and penalties for violation of federal and state laws and administrative sanctions for failure to comply with LUPA CMA requirements intended to protect site-specific biological and non-biological resources. 3. The required LUPA and project-specific measures for avoiding and minimizing effects during all project phases, including but not limited to resource setbacks, trash, speed limits, etc. 4. Reporting requirements and measures to follow if protected resources are encountered, including potential work stoppage and requirements for notification of the designated biologist. 5. Measures

that personnel can take to promote the conservation of biological and non-biological resources.

- Before starting any work, including mowing, staging, installing storm water control structures, implementing other BMPs, removing trees, construction, and restoration, all employees and contractors performing activities and new construction would receive training on environmental requirements that apply to their job duties and work. If additional crewmembers arrive later in the job, they would be required to complete the training before beginning work. Training would include a discussion of the avoidance and minimization measures being implemented and would include information on the Federal and state Endangered Species Acts and the consequences of not complying with these Acts. An educational brochure would be provided to construction crews working on the Project. This brochure would include color photographs of special-status species as well as a discussion of avoidance and minimization measures (BIO-01).
- A qualified biologist would be present during all ground-disturbing activities in non-cultivated areas in California to survey and monitor construction sites for the presence of Mojave Desert tortoises, and move Mojave Desert tortoises out of harm's way. Burrows near construction sites would be clearly delineated and protected to the extent possible (APM-BIO-23, APM-BIO-25).
- A Raven Management Plan would be prepared and implemented to address food and water subsidies, and to avoid providing perches, nesting sites, and roosting sites for the common raven, and provide compensatory mitigation that contributes to LUPA-wide raven management (BMP-BIO-28).
- All culverts for access roads or other barriers would be designed to allow unrestricted access by Mojave Desert tortoises, and Mojave Desert tortoise exclusion fencing may be utilized to direct Mojave Desert tortoise use of culverts and other passages (BMP-BIO-44).
- A designated biologist would accompany any geotechnical testing equipment to ensure no Mojave Desert tortoises are killed and no burrows are crushed (BMP-BIO-44).
- The ground would be inspected under vehicles for the presence of Mojave Desert tortoise any time a vehicle or construction equipment is parked in Mojave Desert tortoise habitat. If the Mojave Desert tortoise does not move on its own within 15 minutes, a designated biologist may remove and relocate the animal to a safe location (BMP-BIO-44).
- Vehicular traffic would not exceed 15 mph within the areas not cleared by protocol level surveys where Mojave Desert tortoise may be impacted (BMP-BIO-44).
- A Compensation Plan would be developed to meet BLM requirements from the

DRECP and other mitigation agreements. The Compensation Plan would include calculations of compensation ratios and mitigation acreages for loss of habitat for special status and protected native plant species, special status plant communities, Mojave Desert tortoise, Sonoran desert tortoise, and any other biological resource requiring additional mitigation. As consistent with BLM policy and resource management plans, compensatory mitigation could include payment of an in-lieu fee; acquiring mitigation land or conservation easements; restoration or habitat enhancement activities on public lands; or a combination of the three (MM-BIO-1).

Survey Summary and Results:

Attach survey report to form: Yes

Signature (Responsible Bureau Official):

MARK MASSAR

Digitally signed by MARK MASSAR Date: 2019.07.11 13:58:55 -07'00

PART B: SERVICE RESPONSE

Service File No. for Proposed Activity: FWS-ERIV-17B0532-19F1234

Date of FWS response to Bureau: 06/19/2019

Conclusion:

Is this project appropriate for use under the programmatic biological opinion: Yes

Additional protective measures or Conservation and Management Actions agreed to by the Bureau and Service during consultation: N/A

Signature:

JENNESS MCBRIDE

Digitally signed by JENNESSMCBRIDE Date: 2019.07.15 10:39:11 -07'00'

Division Chief
Palm Springs Fish and Wildlife Office
Palm Springs, California

PART C: POST PROJECT REPORTING

Number of desert tortoises:

Killed:

Injured:

Moved:

Number of acres actually disturbed:

Non-critical habitat:

Critical Habitat:

Other effects not described above:

Recommendations to improve protection of desert tortoises during future project activities:

APPENDIX B - FIGURES

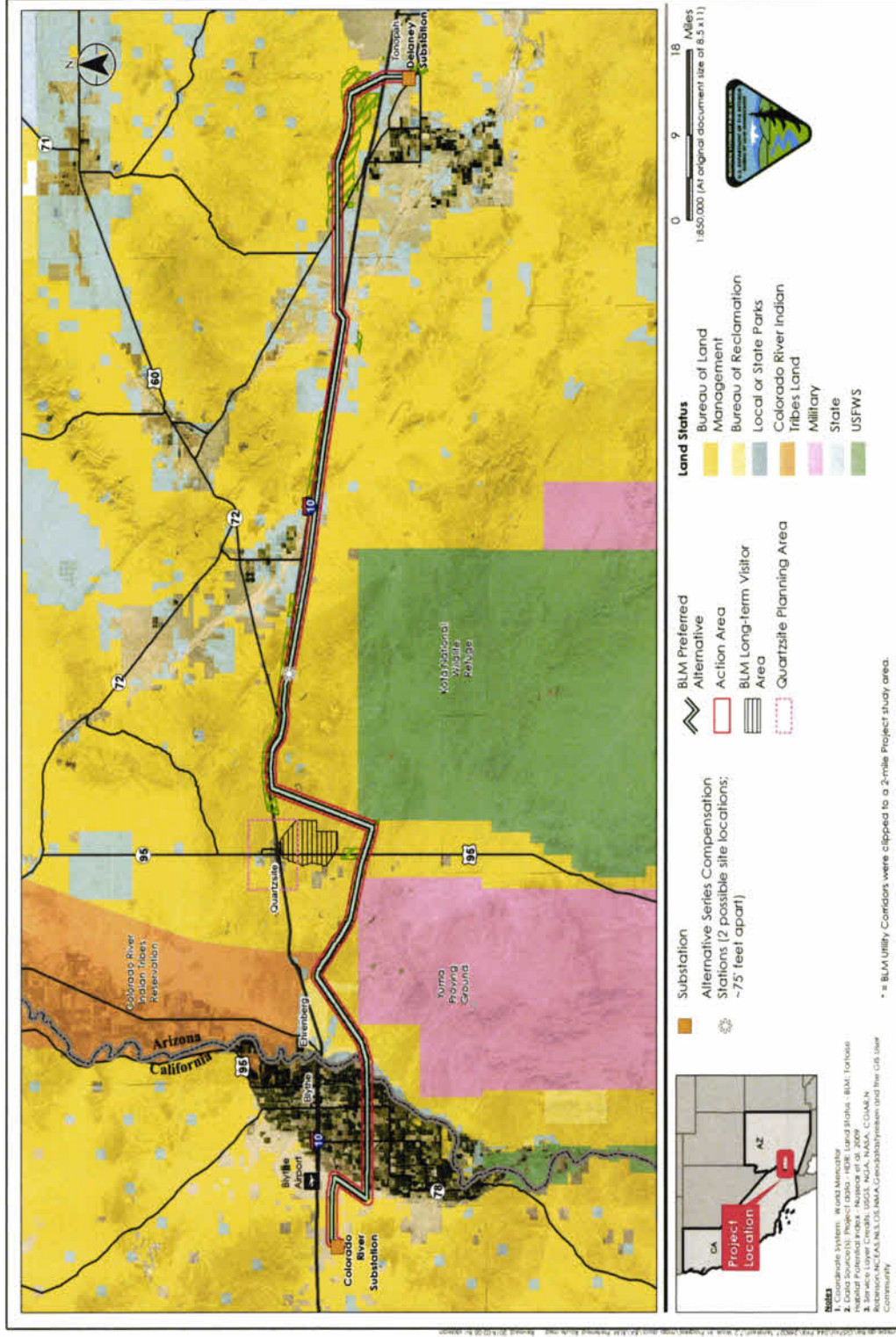


Figure 1. Ten West Link Transmission Line Route from Tonopah, AZ, to Blythe, CA.



Figure 2a: Map of the Kofa NWR showing the proximity of the Ten West Link Transmission Line route in proximity to the refuge

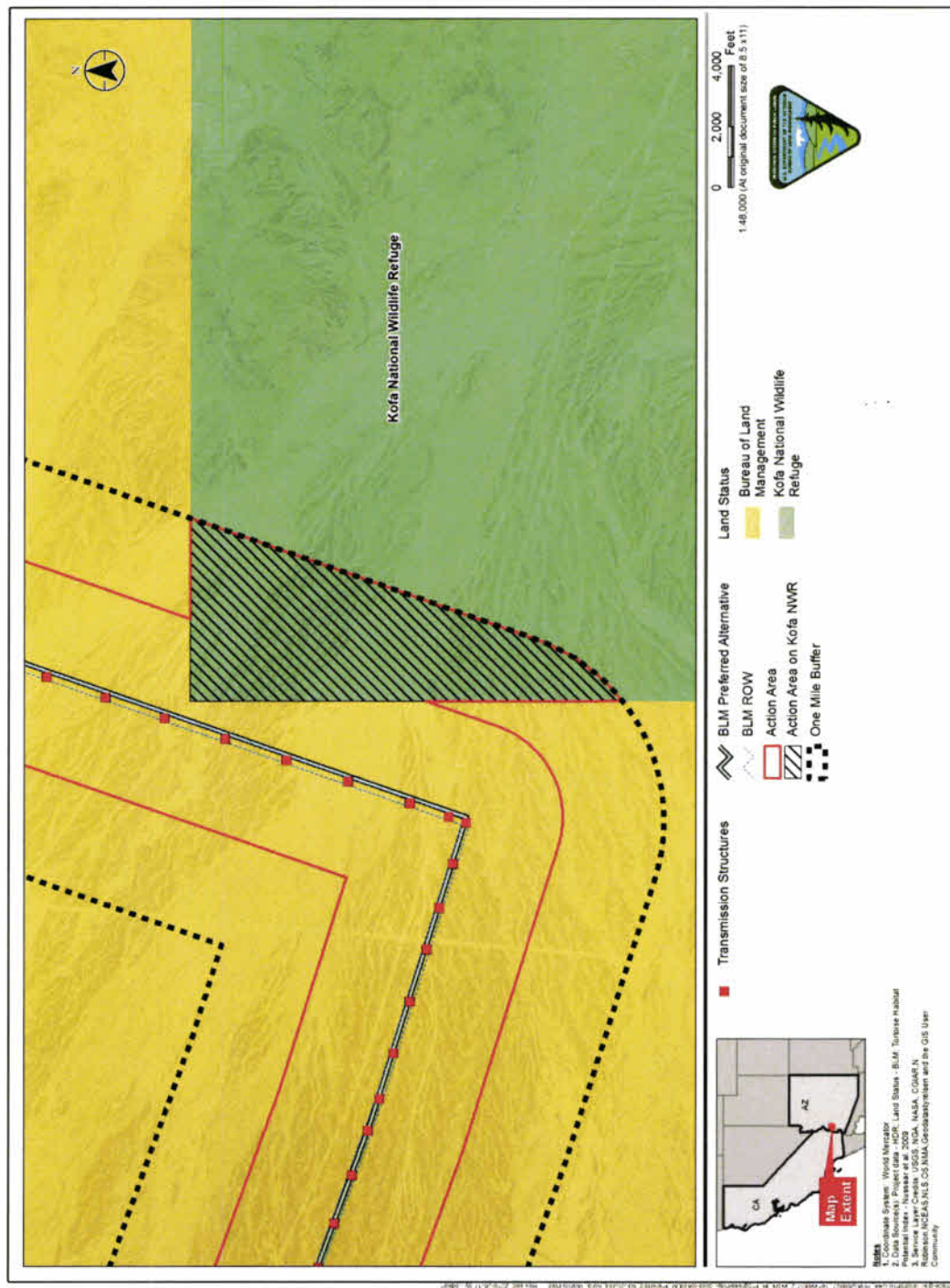


Figure 2b: Map showing the structure locations and a 1-mile buffer of the route in relation to the Kofa NWR.

Exhibit B-3

**EA for
BLM La Paz County
Land Conveyance**



U.S. Department of the Interior
Bureau of Land Management

La Paz County Land Conveyance

ENVIRONMENTAL ASSESSMENT

DOI-BLM-AZ-C020-2020-0004-EA



Prepared by
U.S. Department of the Interior
Bureau of Land Management
Yuma Field Office
7341 E 30th Street, Suite A
Yuma, AZ 85365

December 2019

Environmental Assessment La Paz County Land Conveyance

DOI-BLM-AZ-C020-2020-0004-EA

DECEMBER 2019

Cover Photo (BLM Photograph) taken from the top of the basalt hill in the northwest corner of the parcel
– facing southeast into the parcel.

TABLE OF CONTENTS

Chapter 1. Introduction and Purpose and Need	1
1.1 Background	1
1.2 Location of the Proposed Action	1
1.3 Purpose and Need for Action	1
1.4 Decisions to Be Made	3
1.5 Land Use Plan Conformance	3
1.6 Other Applicable Statutes, Regulations, Policies, and Environmental Analyses	3
Chapter 2. Proposed Action and Alternatives	4
2.1 No Action Alternative	4
2.2 Proposed Action	4
Chapter 3. Affected Environment and Environmental Consequences	5
3.1 Introduction	5
3.2 Resources Considered for Analysis	5
3.3 Cultural Resources	7
3.3.1 Affected Environment	7
3.3.2 Environmental Consequences	7
3.4 Wildlife and Vegetation Resources	8
3.4.1 Affected Environment	8
3.4.2 Environmental Consequences	10
3.5 Livestock Grazing Management	10
3.5.1 Affected Environment	10
3.5.2 Environmental Consequences	11
Chapter 4. Cumulative Impacts Analysis	12
Chapter 5. References	13
Appendix A - John D Dingell, Jr. Conservation, Management, and Recreation Act	14

Acronyms and Abbreviations

AUM	Animal Unit Month
BLM	Bureau of Land Management
CFR	Code of Federal Regulations
Dingell Act	John D Dingell, Jr. Conservation, Management, and Recreation Act 2019
EA	Environmental Assessment
NRHP	National Register of Historic Places
U.S.C.	United States Code

CHAPTER 1. INTRODUCTION AND PURPOSE AND NEED

1.1 Background

The Bureau of Land Management (BLM), Yuma Field Office (YFO) has prepared this environmental assessment (EA) to determine the environmental effects of the Proposed Action, which consists of compliance with Section 1008 of the John D Dingell, Jr. Conservation, Management, and Recreation Act (Dingell Act), signed into law March 12, 2019 (Appendix A). The Dingell Act directs the Secretary of the Interior, to convey approximately 5,900 acres of BLM-administered lands (as depicted on Figure 1) at fair market value to La Paz County, Arizona as soon as practicable. The Dingell Act specifies that the conveyance of lands be subject to valid existing rights, and such terms and conditions as the Secretary determines to be necessary. Additionally the Dingell Act states, "The Secretary shall exclude from the conveyance under paragraph (1) any Federal land that contains significant cultural, environmental, wildlife, or recreational resources."

1.2 Location of the Proposed Action

The Federal lands to be conveyed are located in La Paz County, Arizona (Figure 1). The legal description of these lands is:

Gila and Salt River Meridian, Arizona

T. 3 N., R. 13 W.,

sec. 13, lots 3, 4, 6, and 8, and SW1/4SW1/4;

sec. 14, lots 2, 4, 6, and 8, S1/2SW1/4, and S1/2SE1/4;

sec. 15, lots 2, 4, 6, and 8, SW1/4, NW1/4SE1/4, and S1/2SE1/4;

secs. 21 thru 28.

The area described contains 5,889.18 acres aggregate.

1.3 Purpose and Need for Action

The purpose and need of the Proposed Action is to convey Federal lands to La Paz County, to comply with and implement the provisions of the Dingell Act, as directed by the U.S. Congress.

Proposed La Paz County Land Conveyance
Map prepared at the request of the Senate Energy and Natural Resources Committee
October 1, 2018

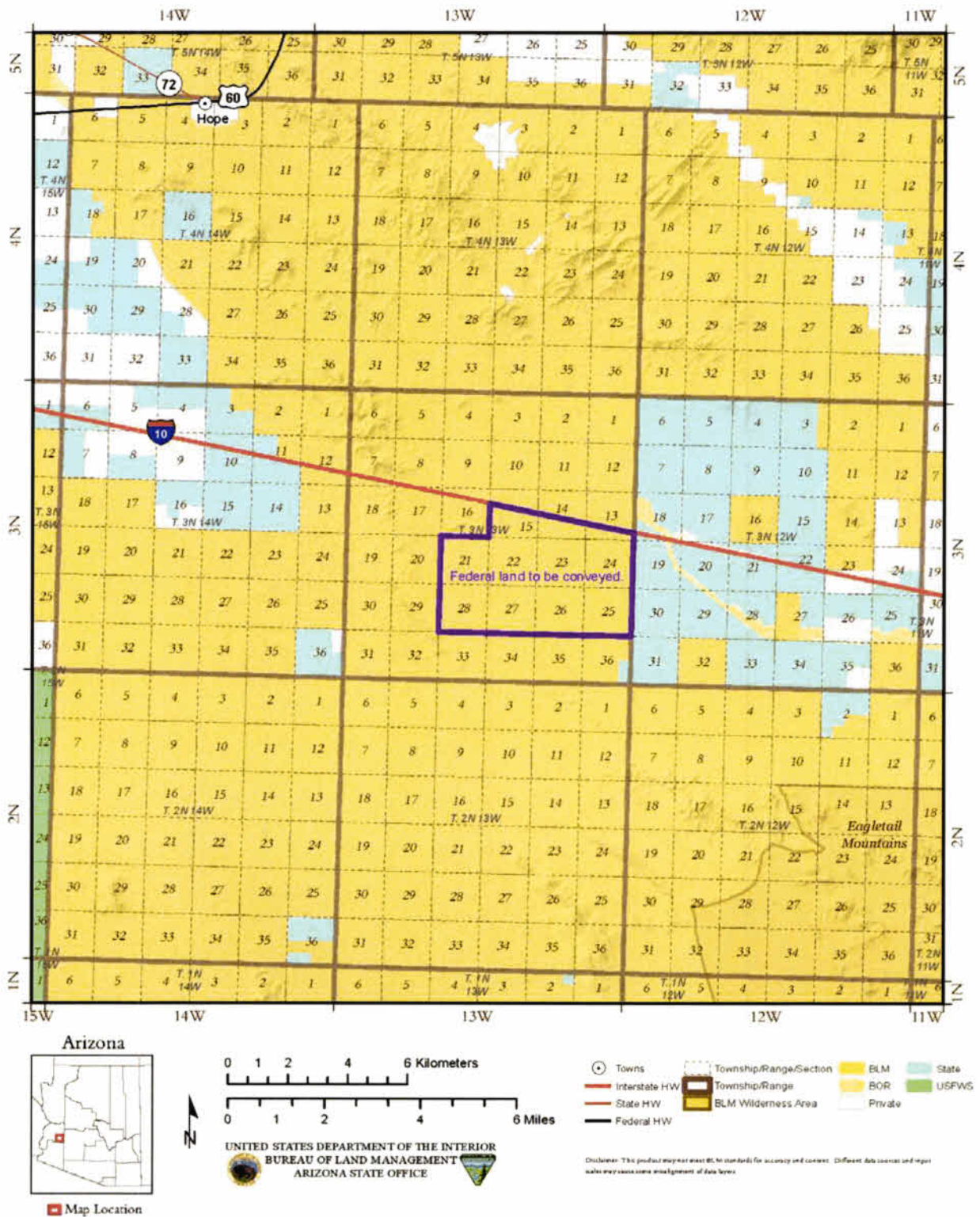


Figure 1. Location Map

1.4 Decisions to Be Made

Conveyance of the Federal lands is directed by the U.S. Congress as specified in the Dingell Act. The Dingell Act states that the Secretary shall determine terms and conditions to be necessary, subject to valid existing rights and to exclude any Federal lands that contain significant cultural, environmental, wildlife or recreational resources from the conveyance (Appendix A, Dingell Act).

1.5 Land Use Plan Conformance

Section 1008(b) (1) of the Dingell Act exempts the conveyance from the land use planning requirements of Sections 202 and 203 of the Federal Land Management Policy Act.

1.6 Other Applicable Statutes, Regulations, Policies, and Environmental Analyses

The Proposed Action is consistent with the Federal Land Policy Management Act of 1976 (43 United States Code (U.S.C.) 1713 et seq.). The conveyance of the federal land to the La Paz County will be carried out in accordance with the Dingell Act, as directed by the U.S. Congress.

CHAPTER 2. PROPOSED ACTION AND ALTERNATIVES

2.1 No Action Alternative

Under the No Action Alternative, the BLM would not convey the public lands to La Paz County and would continue to manage these lands under applicable public land laws. The No Action Alternative would not comply with the Dingell Act. Consistent with 43 Code of Federal Regulations (CFR) 46.310 (b), when there are no unresolved conflicts with respect to alternative uses of available resources, a No Action Alternative does not need to be considered (Federal Register Volume 73, Number 200, October 15, 2008, page 61321). Therefore, the No Action Alternative has not been carried forward for detailed analysis.

2.2 Proposed Action

Under the Proposed Action, the BLM would convey public lands to La Paz County at fair market value in compliance with Section 1008 of the Dingell Act. The lands proposed for conveyance (Figure 1) include 5,889.18 acres of public lands currently administered by the BLM. The Dingell Act specifies that the conveyance of lands be subject to valid existing rights, and such terms and conditions as the Secretary determines to be necessary. The BLM has conducted an internal review of existing files and conducted field inspections of the Dingell Act parcel. The BLM has determined that there are no significant cultural, environmental, wildlife, or recreational resources within the conveyance parcel. Therefore, the BLM proposes to convey the full parcel as specified in the Dingell Act (as described in section 1.2 of this EA).

Under the Proposed Action, the BLM would proceed with the conveyance of the surface estate of the identified lands, subject to valid existing rights. The mineral estate has been withdrawn from mineral entry by the Dingell Act and would not be conveyed to La Paz County. The BLM's conveyance of the lands would release the BLM from future responsibility for decisions that affect the subject parcel and any future potential liabilities for hazardous materials or other issues that could arise from actions taken by or on behalf of La Paz County in any future development of the land.

CHAPTER 3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 Introduction

The following information describes the affected (existing) environment on the Dingell Act parcel and presents the potential effects of the Proposed Action.

3.2 Resources Considered for Analysis

As directed by the U.S. Congress in the Dingell Act, resources considered for analysis in this EA include cultural, environmental, wildlife, and recreational resources. Table 1 identifies the presence or absence of these resource elements for the Dingell Act parcel and provides the rationale for those resources that do not warrant additional analysis in this EA.

Table 1. Determination and Rationale for Exclusion from Detailed Analysis by Resource/Use

Resource/Use	Present Yes/No	May Be Affected Yes/No	Rationale
Air Quality	Yes	No	The conveyance area is considered to be in attainment with the National Ambient Air Quality Standards. The Arizona Department of Environmental Quality is responsible for permitting of activities that may produce emissions or particulates. Although some development could occur in the future, analysis of the impacts on air quality is too speculative to analyze in this EA. Therefore, this resource will not be further analyzed.
Areas of Critical Environmental Concern	No	No	There are no Areas of Critical Environmental Concern located on the lands to be conveyed.
Cultural Resources	No	No	See section 3.3 below.
Floodplains	No	No	There are no floodplains located on the lands to be conveyed.
Land Use Authorizations/Access	Yes	No	The conveyance of lands is subject to valid existing rights, including rights-of-way, as specified in the Dingell Act. The County would succeed the United States in matters relating to the management of these rights. Lands conveyed to the County would no longer be managed as public lands.
Lands with Wilderness Characteristics/Wilderness Areas	No	No	There are no lands identified as having wilderness characteristics and no designated wilderness

Resource/Use	Present Yes/No	May Be Affected Yes/No	Rationale
			areas within the lands to be conveyed.
Livestock Grazing Management	Yes	Yes	See Section 3.5 below.
Mineral Resources	Yes	No	<p>There are no mining claims located on the lands to be conveyed. The mineral estate has been withdrawn from mineral entry by the Dingell Act.</p> <p>The Yuma Resource Management Plan identifies the parcel as part of a larger area with high potential for metallic minerals (Map 3-21 Final Environmental Impact Statement). Potential for other types of minerals is low (leaseable) to moderate (saleable and nonmetallic locatable) and consistent with the rest of the BLM-administered lands in the Yuma Field Office.</p>
Recreation	Yes	No	There may be some low intensity dispersed recreational activities occurring on the parcel. However, these lands are not specifically designated in the Yuma RMP for any recreational uses.
Soil Resources	Yes	No	BLM's action is to convey lands to La Paz County, which is an administrative action. Although some development could occur in the future, analysis of the impacts to soils is too speculative to analyze in this EA.
Threatened, Endangered, and Special Status Species	Yes	No	See section 3.4 below.
Vegetation Resources (native and invasive)	Yes	No	See section 3.4 below.
Wastes – Hazardous or Solid			Under the Proposed Action BLM would have no jurisdiction over hazardous or solid wastes within the Conveyance Area once the conveyance is complete under the Hazard Management and Resource Restoration Manual 1703 or any pertinent federal regulations managing such wastes on public land. The County will complete a Phase I environmental site assessment that meets BLM standards prior to execution of the conveyance.

Resource/Use	Present Yes/No	May Be Affected Yes/No	Rationale
Water Resources (including water rights) and Water Quality (surface/ground)	No	No	No springs were identified on or near the subject parcel. Those drainages and any underground water are not affected by this administrative change in land ownership. Therefore, this resource will not be further analyzed.
Wetlands/ Riparian Zones	No	No	The lands to be conveyed do not support any jurisdictional wetlands or riparian areas that may be affected by the proposed action
Wild and Scenic Rivers	No	No	There are no designated wild and scenic rivers on the lands to be conveyed.
Wildlife (including Migratory Birds)	Yes	No	See section 3.4 below.

3.3 Cultural Resources

The Dingell Act parcel contains no significant cultural resources that warrant exclusion from conveyance.

As the U.S. Congress in the Dingell Act directed this conveyance, conveyance of this parcel of land does not constitute an undertaking subject to Section 106 of the National Historic Preservation Act of 1966.

3.3.1 Affected Environment

The BLM conducted a field survey of the Dingell Act parcel in November 2019 and determined that the area is not suitable for human use and occupation. The parcel has no water or ephemeral drainages that would typically attract human use or occupation. In addition, the parcel has no topography, shade features, or other resources that would typically attract human use or occupation. A review of existing information and files confirm that the parcel is largely devoid of cultural resources. There is one historic airfield that dates to the 1930s known as Salome Intermediate Field. The airfield contains the remnants of two soil runways. There are no hangars or other ancillary features associated with this airfield. The two runways are overgrown with vegetation, and the site no longer retains integrity. The BLM has determined this site Not Eligible for inclusion in the National Register of Historic Places (NRHP). There are two historic can scatters north and west of the airfield that date to the time period that the airfield was in use (ca. 1930 – 1940), but the scatters do not indicate any discrete human behavior or use, and are determined Not Eligible for inclusion in the NRHP.

3.3.2 Environmental Consequences

There will be no direct, indirect, or cumulative impacts, in the short or long term, to cultural resources if the Dingell Act parcel is conveyed out of federal ownership.

3.3.2.1 Measures to Avoid or Minimize Impacts

None identified. However, the Dingell Act section 1008(b)(4) prescribes actions La Paz county must take concerning tribal cultural artifacts if any are found after conveyance.

3.4 Wildlife and Vegetation Resources

3.4.1 Affected Environment

The BLM conducted a site visit to the La Paz County conveyance parcel in May of 2019. The majority of the habitat was creosote-white bursage flats bisected by numerous shallow, braided washes (see Figures 2 and 3 below). The dominant perennial plant community consisted of creosote bush (*Larrea tridentata*), white bursage (*Ambrosia dumosa*), Christmas cactus (*Cylindropuntia leptocaulis*), buckhorn cholla (*Cylindropuntia acanthocarpa*), barrel cactus (*Ferocactus wislizeni*), hedgehog cactus (*Echinocereus engelmannii*) and Saguaro (*Carnegiea gigantea*). Along the wash banks, there was also wolfberry (*Lycium andersonii*), mesquite (*Prosopis velutina*) and trace amounts of big galleta grass (*Pleuraphis rigida*). Additional plant species were present on the basalt hill in the northwest portion of the parcel including ocotillo (*Fouquieria splendens*), range ratany (*Krameria erecta*), triangle-leaf bursage (*Ambrosia deltoidea*), prickly pear cactus (*Opuntia basilaris*), 3-awn grass (*Aristida purpurea*) and fish-hook mammillaria cactus (*Mammillaria tetrancistra*). Along the uphill side of the AT&T Frontage Road, a dense stand of mesquite has become established. Dense stands of mesquite are also present in the southwestern portion of the parcel where an abandoned road crosses a drainage, and off the parcel along the uphill side of the Central Arizona Project canal (north of the parcel).



Figure 2. Representative photo of creosote-white bursage habitat

During the site visit, the following wildlife species were observed: mourning dove, turkey vulture, ash-throated flycatcher, antelope ground squirrel, and zebra-tailed lizard. Wildlife sign observed included a large, inactive raptor nest in a saguaro, nesting cavities in saguaros, pack rat middens, and numerous small mammal burrows.

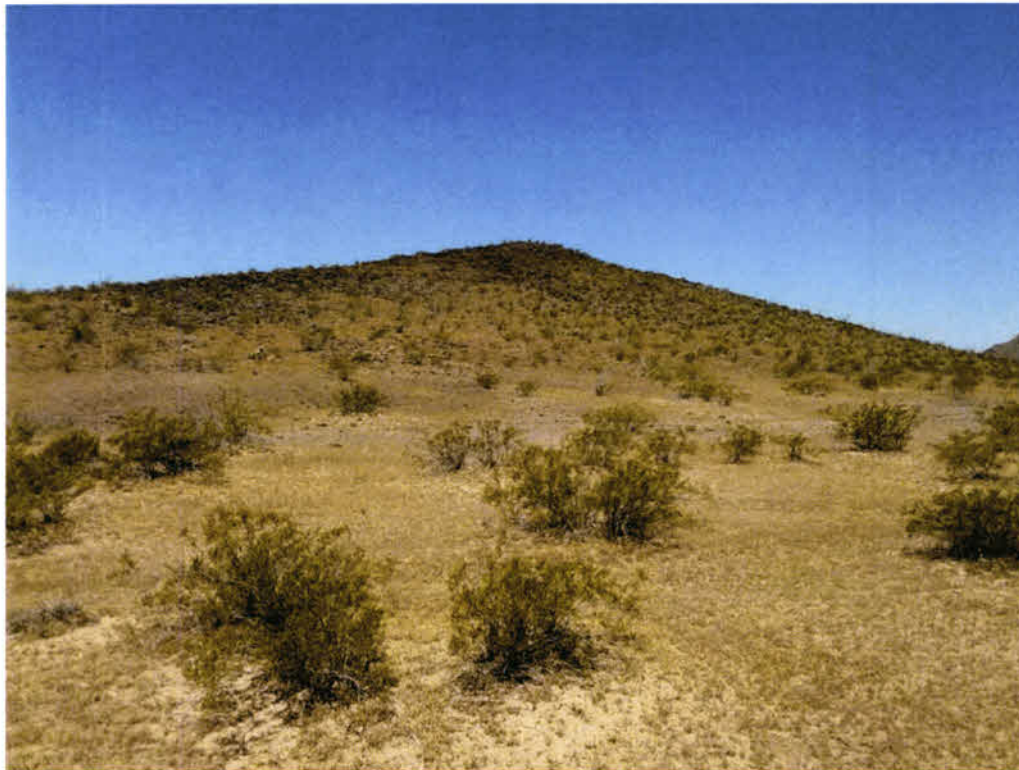


Figure 3. Photo of the base of the basalt hill in the northwestern corner of the parcel.

The Heritage Database Management System was queried for special status species. This query found no documented occurrences of special status species within the conveyance parcel. The parcel lies within a Section 10(j) experimental non-essential population area for Sonoran pronghorn. The closest documented occurrence of Sonoran pronghorns is approximately 7.5 miles (south of) the project area. O'Brien et al. (2005) developed models of potential Sonoran pronghorn habitat within the boundaries of the nonessential experimental population in Arizona. Those models identified much of the area in and near the conveyance parcel as non-habitat or as having a low probability of use by pronghorn. The conveyance parcel comprises less than 0.1% of the total 10(j) area.

In the western portion of the parcel, approximately 429 acres are categorized by BLM as Category III Sonoran desert tortoise habitat (see Figure 4 below). Category III habitat is defined as: 1) Habitat that is not considered essential to the maintenance of viable populations; 2) Habitat where most conflicts are not resolvable; and 3) Habitat that contains low to medium densities of tortoises not contiguous with medium or high densities. A survey was conducted for the portions of the parcel that had the highest potential for the presence of Sonoran desert tortoises. The habitat on the basalt hill was searched for tortoises, tortoise sign, and suitable shelter sites. No tortoises or sign was observed. The habitat on the basalt hill lacked suitable shelter sites. Although there were rock outcrops, there were no overhangs, caves or crevasses with sufficient size or depth to be used as shelter sites, and there was little to no soil present on the hillslope for tortoises to excavate into. The washes on the parcel were searched for the presence of caliche caves that could be used as tortoise shelter sites. Most of the washes on this parcel were shallow with multiple braided channels. The most well developed and heavily vegetated wash lacked incised areas with caliche caves. While there are tortoise forage plants present (although sparse

on much of the parcel), the lack of suitable shelter sites reduces the value as tortoise habitat. Tortoise presence is strongly tied to the availability of shelter sites (Van Devender, et al. 2002). If Sonoran desert tortoises are present on this parcel, they are likely at very low population densities.

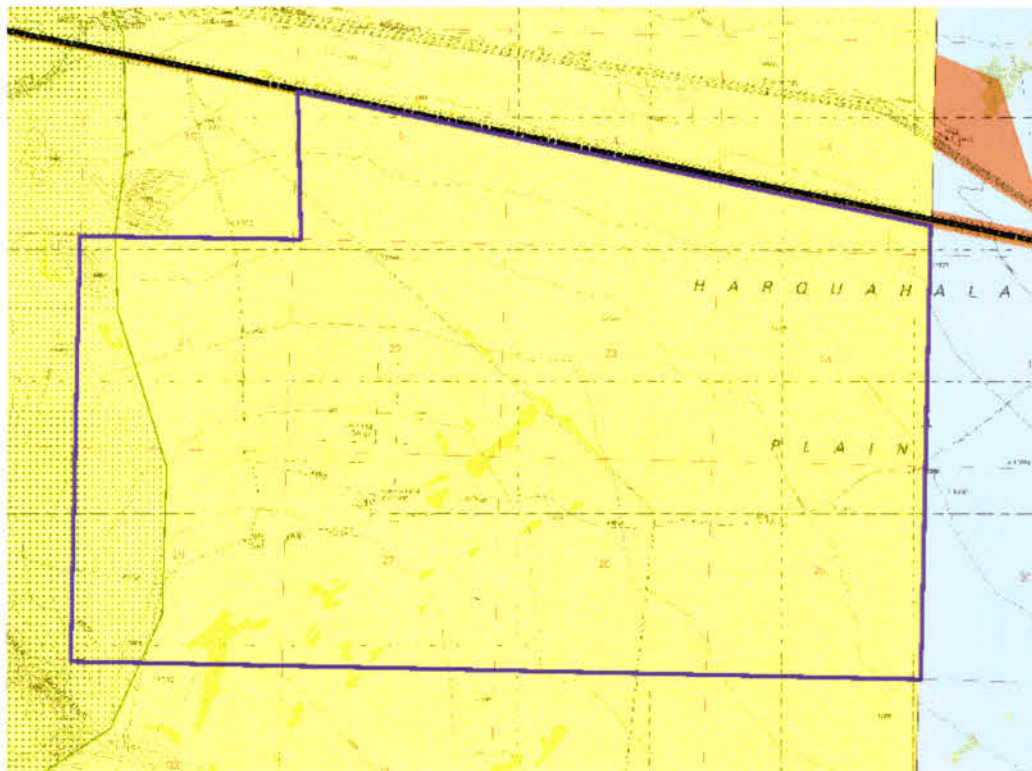


Figure 4. Tortoise habitat categories. Category III Sonoran desert tortoise habitat is depicted by the green stippled overlay on the western end of the parcel.

3.4.2 Environmental Consequences

The Proposed Action would not directly result in additional loss of wildlife habitat, although it creates the opportunity for development, which could result in the loss of wildlife habitat. While wildlife and vegetation species are present in the Conveyance Area, the conveyance is an administrative change. That action alone would not result in direct impacts to vegetation, wildlife, BLM special status species or their habitat.

3.4.2.1 Measures to Avoid or Minimize Impacts

None identified.

3.5 Livestock Grazing Management

3.5.1 Affected Environment

The K Lazy B Allotment has 128,466 acres of public lands with 1861 available animal unit months¹ (AUMs) and currently has a permitted use of 165 cattle for 12 month grazing.

¹ Animal Unit Month: amount of forage necessary for the sustenance of one cow or its equivalent for a period of 1 month (43 CFR 4100.0-5 Definitions).

3.5.2 Environmental Consequences

The lands to be conveyed within the K Lazy B allotment would result in a loss of some of the base water for the allotment, which would necessitate a reduction of animal unit months (AUMs) for the larger allotment. The AUMs would be reduced about 50% from 1861 to 930 once the lands are conveyed.

The Act did not exempt regulation 43 CFR 4110.4-2(b) from compliance, which provides the grazing permittee receive a two-year notification before grazing preference may be canceled in whole or in part, unless the permittee chooses to waive the two-year notification. The BLM provided the permittee this official notice in July 2019.

3.5.2.1 Measures to Avoid or Minimize Impacts

None identified.

CHAPTER 4. CUMULATIVE IMPACTS ANALYSIS

For this analysis, cumulative resource impacts are the combined direct and indirect impacts of the past, present, and reasonably foreseeable future actions, plus the direct and indirect impacts of the Proposed Action and No Action Alternative.

If the direct or indirect impacts to individual resources were considered to be none or negligible because of the Proposed Action, there would be no contribution to the resource's cumulative impacts. Negligible impacts or changes would not be measurable and the resource would remain essentially unaltered. Therefore, there would be no incremental contribution to the resources respective to cumulative impacts.

The cumulative effects area is the approximate 5,900 acres of public lands that would be conveyed to La Paz County, Arizona. The timeframe for the cumulative effects analysis would be indefinite. All resource values have been evaluated for cumulative impacts. There would be a permanent loss of 930 AUMs within the K Lazy B allotment and permittee has been notified in accordance with the grazing regulations of the land conveyance and potential for cancellation of these AUMs.

Because there are no significant cultural, environmental, wildlife, and recreational resources within the Dingell Act parcel, the BLM has determined that cumulative impacts would be negligible as a result of implementation of the Proposed Action.

CHAPTER 5. REFERENCES

- Bureau of Land Management (BLM). 2008a. BLM National Environmental Policy Act Handbook H-1790-1. January.
- _____. 2008b. Manual 6840 – Special Status Species Management, Release 6-125. December 12.
- _____. 2010. Yuma Field Office Record of Decision and Approved Resource Management Plan. January 29.
- Corman, T. E. 2005. “Gilded Flicker” In Arizona Breeding Bird Atlas, edited by T. E. Corman and C. Wise-Gervais. 292–293. University of New Mexico Press, Albuquerque.
- O'Brien, C. S., S. S. Rosenstock, J.J. Hervert, J.L. Bright, and S.R. Roe. 2005. Landscape-level models of potential habitat for Sonoran pronghorn. *Wildlife Society Bulletin* 33(1): 24-34.
- Van Devender, T. R., et al. 2002. *The Sonoran Desert Tortoise: Natural History, Biology, and Conservation*. University of Arizona Press

APPENDIX A - JOHN D DINGELL, JR. CONSERVATION, MANAGEMENT, AND RECREATION ACT

SEC. 1008. LA PAZ COUNTY LAND CONVEYANCE.

(a) DEFINITIONS.—In this section:

(1) COUNTY.—The term "County" means La Paz County, Arizona.

(2) FEDERAL LAND.—The term "Federal land" means the approximately 5,935 acres of land managed by the Bureau of Land Management and designated as "Federal land to be conveyed" on the map.

(3) MAP.—The term "map" means the map prepared by the Bureau of Land Management entitled "Proposed La Paz County Land Conveyance" and dated October 1, 2018.

(b) CONVEYANCE TO LA PAZ COUNTY, ARIZONA.—

(1) IN GENERAL.—Notwithstanding the planning requirement of sections 202 and 203 of the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1712, 1713) and in accordance with this section and other applicable law, as soon as practicable after receiving a request from the County to convey the Federal land, the Secretary shall convey the Federal land to the County.

(2) RESTRICTIONS ON CONVEYANCE.—

(A) IN GENERAL.—The conveyance under paragraph (1) shall be subject to—

(i) valid existing rights; and

(ii) such terms and conditions as the Secretary determines to be necessary.

(B) EXCLUSION.—The Secretary shall exclude from the conveyance under paragraph (1) any Federal land that contains significant cultural, environmental, wildlife, or recreational resources.

(3) PAYMENT OF FAIR MARKET VALUE.—The conveyance under paragraph (1) shall be for the fair market value of the Federal land to be conveyed, as determined—

(A) in accordance with the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701 et seq.); and

(B) based on an appraisal that is conducted in accordance with—

(i) the Uniform Appraisal Standards for Federal Land Acquisitions; and

(ii) the Uniform Standards of Professional Appraisal Practice.

(4) PROTECTION OF TRIBAL CULTURAL ARTIFACTS.—As a condition of the conveyance under paragraph (1), the County as a condition of any subsequent conveyance, any subsequent owner shall—

S. 47–16

(A) make good faith efforts to avoid disturbing Tribal artifacts;

(B) minimize impacts on Tribal artifacts if they are disturbed;

(C) coordinate with the Colorado River Indian Tribes Tribal Historic Preservation Office to identify artifacts of cultural and historic significance; and

(D) allow Tribal representatives to rebury unearthed artifacts at or near where they were discovered.

(5) AVAILABILITY OF MAP.—

(A) IN GENERAL.—The map shall be on file and available for public inspection in the appropriate offices of the Bureau of Land Management.

(B) CORRECTIONS.—The Secretary and the County may, by mutual agreement—

(i) make minor boundary adjustments to the Federal land to be conveyed under paragraph (1); and

(ii) correct any minor errors in the map, an acreage estimate, or the description of the Federal land.

(6) WITHDRAWAL.—The Federal land is withdrawn from the operation of the mining and mineral leasing laws of the United States.

(7) COSTS.—As a condition of the conveyance of the Federal land under paragraph (1), the County shall pay—

(A) an amount equal to the appraised value determined in accordance with paragraph (3)(B); and

(B) all costs related to the conveyance, including all surveys, appraisals, and other administrative costs associated with the conveyance of the Federal land to the County under paragraph (1).

(8) PROCEEDS FROM THE SALE OF LAND.—The proceeds from the sale of land under this subsection shall be—

(A) deposited in the Federal Land Disposal Account established by section 206(a) of the Federal Land Trans- action Facilitation Act (43 U.S.C. 2305(a)); and

(B) used in accordance with that Act (43 U.S.C. 2301 seq.).

Exhibit B-4

**AGFD
Letter to
Randy Schulze**



June 04, 2021

Randy Schulze
CBX International

Electronically submitted to: rschulze@cbxinternational.net

RE: Cielo Azul 500kV Switchyard - Ten West Link Transmission

Dear Mr. Schulze:

The Arizona Game and Fish Department (Department) appreciates the opportunity to review the Cielo Azul 500kV Switchyard project. The Cielo Azul will consist of an approximately 36 acre 500 kV switchyard and a looped 500 kV connect to the Ten West Link. Cielo Azul will be fenced and contain equipment similar to that installed in other 500 kV switchyards and substations in Arizona. The ground surface within the fenced area of Cielo Azul will be covered with gravel and a detention pond will be included to manage stormwater runoff. The connection with Ten West Link will be accomplished using steel monopoles on drilled piers.

Under Title 17 of the Arizona Revised Statutes, the Department, by and through the Arizona Game and Fish Commission (Commission), has jurisdictional authority and public trust responsibilities to conserve and protect the state fish and wildlife resources. In addition, the Department manages threatened and endangered species through authorities of Section 6 of the Endangered Species Act and the Department's 10(a)1(A) permit. It is the mission of the Department to conserve and protect Arizona's diverse fish and wildlife resources and manage for safe, compatible outdoor recreation opportunities for current and future generations.

Similarly, the Department recognizes the importance of planning efforts to develop renewable energy locations that contribute to regional and state economic growth needs and would like to work closely with DCR Transmission during development of this economically important facility. The Department recognizes that appropriate coordination, proper planning, and voluntary measures to implement best management practices allow projects to be developed that avoid, minimize, or mitigate potential impacts to wildlife and recreational access during development and operation of the facility. For your consideration, the Department provides the following comments based on the agency's statutory authorities, public trust responsibilities, and special expertise related to wildlife resources and recreation.

The project area, as well as the land surrounding it, is utilized by wildlife. The Department encourages pre-construction surveys and monitoring to determine species presence as referenced in *Guidelines for Solar Development in Arizona* (<https://s3.amazonaws.com/azgfd-portal-wordpress/PortalImages/files/wildlife/planningFor/wildl>

azgfd.gov | 928.342.0091

YUMA OFFICE: 9140 E. 28TH ST., YUMA AZ 85365

GOVERNOR: DOUGLAS A. DUCEY **COMMISSIONERS:** CHAIRMAN KURT R. DAVIS, PHOENIX | LELAND S. "BILL" BRAKE, ELGIN
JAMES E. COUGHNOUR, PAYSON | TODD G. GEILER, PRESCOTT | CLAY HERNANDEZ, TUCSON **DIRECTOR:** TY E. GRAY **DEPUTY DIRECTOR:** TOM P. FINLEY

[ifeFriendlyGuidelines/FinalSolarGuidelines03122010.pdf](#)). The Department is available to review survey designs and provide input on developing best-management practices in order to develop this economically-important facility while also minimizing any potential impacts to wildlife during construction and operation of the facility.

Based on Department data, a portion of the project area has been used by the 10J designated, experimental nonessential population of the endangered Sonoran pronghorn. Sonoran pronghorn have specific habitat requirements based on their life history and survival strategy. This population is relatively new and its range is expanding into previously unused areas. Based on the proposed location of the project, the Department would welcome the opportunity to work directly with DCR Transmission to minimize any potential impacts to Sonoran pronghorn. In the interim, the Department recommends the following measures to avoid and minimize potential impacts:

- Coordination between the Department and DCR Transmission prior to construction activities in order to exchange information on current Sonoran pronghorn use in the project area.
- To minimize potential impacts, it is ideal to schedule construction activities outside the fawning season for Sonoran pronghorn, February 1 to July 15.
- If pronghorn are detected during construction activities, please notify the US Fish and Wildlife Service, Arizona Ecological Services Office (AESO) and the Department's Sonoran Pronghorn Program Lead (jbright@azgfd.gov) as soon as possible.

Additionally, the Department offers the following best management practices for wildlife that may be affected by the facility:

- The western burrowing owl, a special status species that is regulated under the Migratory Bird Treaty Act (MBTA), may be present within the project area. If suitable habitat for this species is present within or adjacent to your project area, the Department recommends conducting an occupancy survey for western burrowing owls to determine if this species occurs within your project footprint. Guidelines for conducting this survey are found in *Burrowing Owl Project Clearance Guidance for Landowners* which can be accessed online through the link below. Please note that the survey should be conducted by a surveyor that is certified by the Department. If an active burrowing owl burrow is detected, please contact the Department and the U.S. Fish and Wildlife Service for direction, in accordance with the *Burrowing Owl Project Clearance Guidance for Landowners*.
<https://www.azgfd.com/wildlife/speciesofgreatestconservneed/raptor-management/burrowing-owl-mangement/>
- Sonoran desert habitats and its associated fauna are highly dependent on the minimal precipitation received each year. The resulting sheet flows contribute to the hydrology of areas where rain events often occur in isolated patches. To the extent possible, the Department recommends minimizing alterations to the landscape that have the potential

to impact vegetation and alter wildlife distributions and abundance beyond the project area.

- The Department understands that DCR Transmission plans to construct a retention basin to manage stormwater runoff on the project site. Wildlife such as birds, small mammals, reptiles, and amphibians may be attracted to the retention basin which could present concerns, including accidental drowning of wildlife. The Department recommends fencing the perimeter and placing screens over the basin to prevent wildlife from entering.
- Artificial night lighting may attract insects and the species that prey on them (e.g. bats). It could also impair the ability of nocturnal animals to navigate. The Department recommends using only the minimum amount of light needed for safety. If feasible, narrow spectrum lighting is wildlife-friendly and should be used as often as possible to minimize the number of species affected by lighting. It is also beneficial that all lighting is shielded, canted, or cut to minimize the amount of upward shining light.
- Birds of prey such as raptors, owls, vultures, and eagles are vulnerable to electrocution and powerline strikes during construction and operation. There are a number of design features that can minimize impacts to these important species. Tuk Jacobson is the Department's raptor expert and will be willing to share information on best management practices; he can be contacted at kjacobson@azgfd.gov or 623-236-7575. Power poles can serve as perches for many birds of prey and there are design features for structures that can reduce impacts to these important species. Another possible alternative to reduce mortality is using bird flight diverters to decrease avian mortalities. Again, Mr. Jacobson has expertise in all of the best management practices and would be available to share his knowledge in the pre-design phase of this project.
- The Department's *Wildlife Compatible Fencing Guidelines* (https://s3.amazonaws.com/azgfd-portal-wordpress/PortalImages/files/wildlife/planningF/wildlifeFriendlyGuidelines/110125_AGFD_fencing_guidelines.pdf) provide information on how fencing impacts wildlife, ways to design fencing to prevent wildlife entanglement and impalement, and to ensure wildlife movement is not restricted. The Department developed these guidelines to assist landowners, project managers, land management agencies, and others in designing wildlife compatible fences. The focus is on fence design rather than detailed fence construction specifications. The goal is to provide guidance in designing a fence that will achieve its objective with minimum impact to wildlife.
- If trenching will occur for the proposed project, the Department recommends that trenching and backfilling crews be close together to minimize the amount of open trenches at any given time. Where trenches cannot be back-filled immediately, the Department recommends escape ramps be constructed at least every 90 meters. Escape ramps can be short lateral trenches or wooden planks sloping to the surface. The slope

should be less than 45 degrees (1:1). Trenches that have been left open overnight should be inspected and animals removed prior to backfilling.

Thank you for the opportunity to provide input on the Cielo Azul 500kV Switchyard Project. For further coordination, please contact Ian Latella at ilatella@azgfd.gov or 928-580-0163.

Sincerely,

A handwritten signature in black ink, appearing to read "Michael Sumner", written in a cursive style.

Michael Sumner
Regional Supervisor, Region IV

cc: Ginger Ritter, Project Evaluation Program Supervisor
Tyler Williford, Habitat, Evaluation, and Lands Program Supervisor, Region IV

AGFD # M21-05244644

**CIELO AZUL SWITCHYARD PROJECT
APPLICATION FOR CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY**

EXHIBIT C: AREAS OF BIOLOGICAL WEALTH

SUMMARY MEMORANDUM

Per A.A.C. R14-3-219, Exhibits to Application, Exhibit C of an application for a Certificate of Environmental Compatibility must consider the following:

Describe any areas in the vicinity of the proposed site or route which are unique because of biological wealth or because they are habitats for rare and endangered species. Describe the biological wealth or species involved and state the effects, if any, the proposed facilities will have thereon.

This memorandum provides a summary of potential effects to sensitive species and habitats within and near the Project area based on biological studies completed for the Ten West Link transmission line, the Environmental Assessment completed by the BLM for the approximately 5,900-acre La Paz County Land Conveyance (BLM 2019a)¹, and a recent review of the Arizona Game and Fish Department (“AGFD”) Heritage Data Management System (“HDMS”) report. Note that references to other “Exhibits” refer to exhibits to the CEC application.

I. FEDERALLY LISTED SPECIES

The Project is not anticipated to affect any federally listed species or designated critical habitat. The Biological Assessment (BLM 2019b)² (“BA”) completed for the Ten West Link transmission line identified a total of six species listed under the Endangered Species Act (“ESA”) as being present or potentially present in or near the proposed transmission line in Arizona. Because five of the six species rely on aquatic or riparian habitat that does not occur within the Cielo Azul Project area, only one of those species, the Sonoran pronghorn (*Antilocapra americana sonoriensis*) has the potential to occur in or near the Project area. The results of a March 23, 2021 query of the AGFD HDMS indicates that no listed species have been identified within 3 miles of the Cielo Azul Project area.

The Project site is located within the designated Sonoran Pronghorn Nonessential Experimental Population Area; however, no reports of this species being recorded near the Project area have been

¹ Bureau of Land Management (BLM). 2019a. Environmental Assessment La Paz County Land Conveyance (DOI-BLM-AZ-C020-2020-0004-EA). December 2019.

² Bureau of Land Management. 2019b. Final Biological Assessment for the Ten West Link Transmission Line Project. U.S. Fish and Wildlife Service, Southwest Region, Albuquerque, New Mexico, USA.

found (BLM 2019a). The Sonoran pronghorn is classified as endangered under the ESA and as a BLM Species of Greatest Conservation Need (“SGCN”) in Arizona. A nonessential experimental population has been established to reintroduce this subspecies in the Kofa National Wildlife Refuge (“NWR”) and a large surrounding area (USFWS 2016³). The Cielo Azul Project area is located just inside the northern boundary of that designated nonessential experimental population area. Approximately 70 Sonoran pronghorn were released into King Valley on the Kofa NWR from 2013 through January 2016. Most of those animals have remained in that valley on the Kofa NWR and the Yuma Proving Grounds (“YPG”), more than 30 miles southwest of the Project area. Habitat models developed for the Sonoran pronghorn within the boundaries of the nonessential population designates much of the area along I-10 in the Ranegras and Harquahala plains (where the Project is located) as non-habitat or as having a low probability of use by pronghorn (USFWS 2016).

2. STATE PROTECTED SPECIES

2.1. WILDLIFE

The HDMS report states, “No special status species were documented as occurring within the project vicinity.” The HDMS report did identify a number of SGCN that are predicted to intersect with the Project footprint based on predicted range models. None of these species have been identified on the Project site to date. A biological survey of the Project site will be conducted prior to initiation of construction activities.

In a letter dated June 4, 2021 (AGFD 2021⁴), the AGFD suggested several mitigation measures to reduce the potential for Project impacts to wildlife species, including preconstruction surveys, appropriate wildlife exclusions and fencing, and minimizing any potential effects from trenching. DCR Transmission L.L.C. (DCRT) is committed to incorporating the recommended mitigation measures where appropriate and feasible as noted above.

3. PROTECTED AREAS

There are six designated Wilderness Areas (**Exhibit A-1**) within 20 miles of the Project area: Harquahala Mountains, Hummingbird Springs, Big Horn Mountains, Eagletail Mountains, Kofa, and New Water Mountains. None of these Wilderness Areas will be directly or indirectly impacted by the Project.

³ U. S. Fish and Wildlife Service. 2016. Recovery Plan for the Sonoran pronghorn (*Antilocapra americana sonoriensis*), Second Revision. U.S. Fish and Wildlife Service, Southwest Region, Albuquerque, New Mexico, USA.

⁴ Arizona Game and Fish Department. 2021. Letter to Randy Schulze, CBX International (acting on behalf of DCR Transmission, L.L.C.), responding to request for Cielo Azul Project review. Dated June 4, 2021.

**CIELO AZUL SWITCHYARD PROJECT
APPLICATION FOR CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY**

EXHIBIT D: BIOLOGICAL RESOURCES

SUMMARY MEMORANDUM

Per A.A.C. R14-3-219, Exhibits to Application, Exhibit D of an application for a Certificate of Environmental Compatibility must consider the following:

List the fish, wildlife, plant life and associated forms of life in the vicinity of the proposed site or route and describe the effects, if any, the proposed facilities will have thereon.

This memorandum provides a summary of potential Project effects to biological resources within and near the Project area based on biological studies completed for the Ten West Link transmission line, the Environmental Assessment (“EA”) completed by the BLM for the approximately 5,900-acre La Paz County Land Conveyance, and a review of the Arizona Game and Fish Department (“AGFD”) Heritage Data Management System (“HDMS”) report for the Cielo Azul Project area. Note that references to “Exhibits” refer to other exhibits to the CEC application.

I. HABITAT

As part of the approximately 5,900-acre La Paz County land conveyance, BLM staff conducted a site visit of the land transfer parcel, including the Project site, in May 2019 (BLM 2019¹). The Project site habitat is indicative of Sonoran desertscrub and is characterized by creosote bush-white bursage flats bisected by shallow, braided ephemeral washes. The dominant perennial plant community within the conveyance parcel (and by association, the Cielo Azul Project area) consisted of creosote bush (*Larrea tridentata*), white bursage (*Ambrosia dumosa*), Christmas cactus (*Cylindropuntia leptocaulis*), buckhorn cholla (*Cylindropuntia acanthocarpa*), barrel cactus (*Ferocactus wislizeni*), hedgehog cactus (*Echinocereus engelmannii*) and saguaro (*Carnegiea gigantea*).

2. WILDLIFE

An evaluation of the wildlife within the general Project area was completed by the BLM for the approximately 5,900-acre land conveyance to La Paz County, which includes the Cielo Azul Project area. During a May 2019 field evaluation completed to support the land conveyance EA, BLM staff observed the following wildlife species during the site visit: mourning dove, turkey vulture, ash-

¹ Bureau of Land Management (BLM). 2019. Environmental Assessment La Paz County Land Conveyance (DOI-BLM-AZ-C020-2020-0004-EA). December 2019.

throated flycatcher, antelope ground squirrel, and zebra-tailed lizard. Wildlife sign observed within the conveyance parcel included a large, inactive raptor nest in a saguaro, nesting cavities in saguaros, pack rat middens, and numerous small mammal burrows.

The open desert habitat of the Project area does not provide the rugged mountain habitat required for desert bighorn sheep and is not listed as a bighorn sheep lambing area by the AGFD. Similarly, the Project area is not within designated habitat for the Sonoran Desert tortoise. The lack of mature trees within the Cielo Azul Project area precludes the potential for raptor nests.

3. PROJECT EFFECTS

Project impacts to biological resources would occur from vegetation removal during construction. Project construction and related activities could result in temporary damage to and/or permanent loss of vegetation, habitat loss and mortality of general wildlife species, and temporary disturbance to and/or loss of individuals or habitats of special status plant and animal species. Temporary disturbance includes short-term impacts (less than 2 years) associated with construction, such as air quality, noise, and the presence of construction workers, though ground disturbance for the Project is not considered temporary.

Ground disturbance impacts associated with the permanent Project features (e.g., switchyard, microwave communications tower, transmission structures and access roads) that would remain throughout the life of the Project (i.e., 50 years) would be considered long-term impacts.

Project implementation would have direct and indirect impacts on vegetation resources located within areas disturbed by construction activity; however, these impacts would be minimized through implementation of various mitigation measures, such as pre-construction surveys, contractor training, covering of trenches, and restricting overland travel.

Potential impacts to wildlife associated with construction and operation of the Project include loss of habitat, temporary displacement during construction, direct mortality of wildlife that are less mobile such as snakes, lizards, and small mammals, and altering, displacing, or disrupting the breeding and foraging behavior of wildlife. These impacts are expected to be minor given the overall small footprint of the Project, the relatively short-term construction, and the mitigation measures to be implemented. The Project site does not contain any habitat that is unique to the general region. Overall, the amount of habitat that would be impacted by Project activities would be small in comparison to total available habitat in the general area, and the limited loss of individuals would not impact local populations.

**CIELO AZUL SWITCHYARD PROJECT
APPLICATION FOR CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY**

EXHIBIT E: SCENIC AREAS, HISTORIC SITES AND STRUCTURES, AND ARCHAEOLOGICAL SITES

SUMMARY MEMORANDUM

Per A.A.C. R14-3-219, Exhibits to Application, Exhibit E of an application for a Certificate of Environmental Compatibility must consider the following:

Describe any existing scenic areas, historic sites and structures or archaeological sites in the vicinity of the proposed facilities and state the effects, if any, the proposed facilities will have thereon.

This memorandum provides a summary of potential Project effects to these resources within and near the Project area. Note that references to “Exhibits” refer to other exhibits to the CEC application.

I. SCENIC AREAS

In the Cielo Azul Project area, the landscape is characterized by desert vegetation, substantial anthropogenic features such as I-10 and the Central Arizona Project (“CAP”) canal, and existing transmission lines. There are no wild and scenic rivers, national scenic and/or backcountry byways, national monuments, or other designated scenic areas in the Project area.

The Project will be visible to sensitive viewers traveling along I-10; substantially fewer viewers would be traveling on AT&T Frontage Road, and fewer still would be traveling the relatively limited number of local routes.

Visual impacts will occur during both the construction and operation phases of the Project. Disturbance resulting from construction (dust, movement, etc.) would be temporary and largely short in duration, and visible effects from active construction would diminish after clean up.

Prior to its conveyance to La Paz County, the approximately 5,900-acre conveyance parcel, which includes the Cielo Azul Project area, was rated as scenic quality C by the BLM, or of low scenic value due to the I-10 transportation corridor and the designated utility corridors. Therefore, although the Project may reduce the scenic quality in the immediate area, impacts would be in keeping with the visual quality of the surrounding viewshed and would not further reduce the scenic quality rating of the area.

2. CULTURAL RESOURCES

A cultural resources field survey of the approximately 5,900-acre La Paz County land conveyance parcel (which includes the Cielo Azul Project area) was completed by the BLM as part of the conveyance Environmental Assessment (“EA”) (BLM 2019)¹. BLM (2019) notes the following regarding the conveyance parcel:

“...[T]he area is not suitable for human use and occupation. The parcel has no water or ephemeral drainages that would typically attract human use or occupation. In addition, the parcel has no topography, shade features, or other resources that would typically attract human use or occupation. A review of existing information and files confirm that the parcel is largely devoid of cultural resources.”

In May 2021, AZTEC Engineering Group, Inc. (AZTEC) conducted a Class III cultural resources survey of the Atlas Solar project site as well as the 55-acre Cielo Azul Project site. The survey was conducted in accordance with an Arizona Antiquities Act permit issued by the Arizona State Museum. No artifacts or sites were found within the Cielo Azul Project site. There are no cultural resources south or east of the Cielo Azul Project site that would interfere with access to the Project site from Connector Road.

¹ Bureau of Land Management (BLM). 2019. Environmental Assessment La Paz County Land Conveyance (DOI-BLM-AZ-C020-2020-0004-EA). December 2019.

**CIELO AZUL SWITCHYARD PROJECT
APPLICATION FOR CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY**

EXHIBIT F: RECREATIONAL PURPOSES AND ASPECTS

SUMMARY MEMORANDUM

Per A.A.C. R14-3-219, Exhibits to Application, Exhibit F of an application for a Certificate of Environmental Compatibility must consider the following:

“State the extent, if any, the proposed site or route will be available to the public for recreational purposes, consistent with safety considerations and regulations and attach any plans the applicant may have concerning the development of the recreational aspects of the proposed site or route.”

This memorandum provides a summary of potential Project effects to these resources within and near the Project area. Note that references to “Exhibits” refer to other exhibits to the CEC application.

An evaluation of potential effects to recreation resources for the Cielo Azul switchyard was completed as part of the La Paz County Land Conveyance Environmental Assessment. The BLM determined that there are no significant recreational resources within the conveyance parcels. Lands conveyed to the County would no longer be managed as public lands. The requirement for the BLM to convey approximately 5,900 acres of lands to La Paz County was completed with the intent of using the land for economic development and renewable electricity generation opportunities. Recreational opportunities therefore were not intended for the conveyance parcel, including the Cielo Azul Project area.

**CIELO AZUL SWITCHYARD PROJECT
APPLICATION FOR CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY**

EXHIBIT G: CONCEPTS OF PROPOSED FACILITIES

Per A.A.C. R14-3-219, Exhibits to Application, Exhibit G of an application for a Certificate of Environmental Compatibility must consider the following:

“Attach any artist’s or architect’s conception of the proposed plant or transmission line structures and switchyards, which applicant believes may be informative to the Committee.”

Set forth below is a list of attached sub-exhibits, which provide concepts of the proposed Project that DCR Transmission, L.L.C., believes will be informative to the Siting Committee.

- Exhibit G-1:** Proposed Steel Structure
Exhibit G-2: Switchyard General Arrangement

Exhibit G-I
Proposed Steel
Structure

STRUCTURE INFORMATION			
CIRCUIT NAME	STRUCTURE NO.	STRUCTURE HEIGHT (FT)	LINE ANGLE (DEG)
TEN WEST LINK	115A	185	-100
TEN WEST LINK	115B	185	90
TEN WEST LINK	115E	135	90
TEN WEST LINK	115F	135	-80

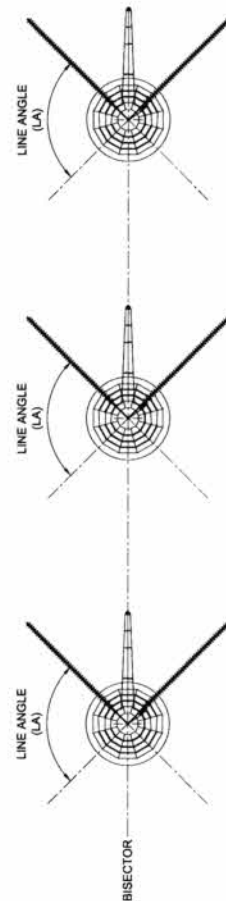
FOR STRUCTURE LINE ANGLES SEE TABLE ON THIS SHEET.

1. ALL INFORMATION AND MATERIAL TO ERECT STRUCTURES ARE INCLUDED IN THE VENDOR DRAWING, BILL OF MATERIAL, AND OFFERED DETAIL SHEETS.

2. A MINIMUM BEND RADIUS FOR OPW AS RECOMMEND BY MANUFACTURER.

3. FOR UNICE BOX LOCATION SEE PLAN AND PROFILE SHEETS.

4. POLYMER BOX SHALL BE CONNECTED TOGETHER.



VIEW

PLAN VIEW

POSITIVE LINE ANGLE AS SHOWN

NEGATIVE LINE ANGLE OPPOSITE

PRELIMINARY
NOT FOR CONSTRUCTION

DRAWING NUMBER	REVISION
EXHIBIT G-1	0A

DCRT CIELO AZUL
500 KV SWITCHYARD

DCR TRANSMISSION, L.L.C.



CAD FILE NAME	EXHIBIT G-1
PREPARED BY:	R. PEACE
REVIEWED BY:	
APPROVED BY:	

JASON D. JOCHAM
MY LICENSE NUMBER: 09183

ISSUE PURPOSE:	FOR CEC APPLICATION
SPECIFICATION:	
PROJECT NO.:	A13488.001

I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT PERSONAL SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF ARIZONA.

RELEASE INFORMATION		
REV.	DATE	DESCRIPTION
0A	06/03/2008	ISSUED FOR CEC APPLICATION

CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PEOPLE LOCATED ON THE WORK SITE, INCLUDING CONTRACTOR/INSTALLER'S PERSONNEL (OR THAT OF ITS SUB-CONTRACTORS)

HOLD INFORMATION

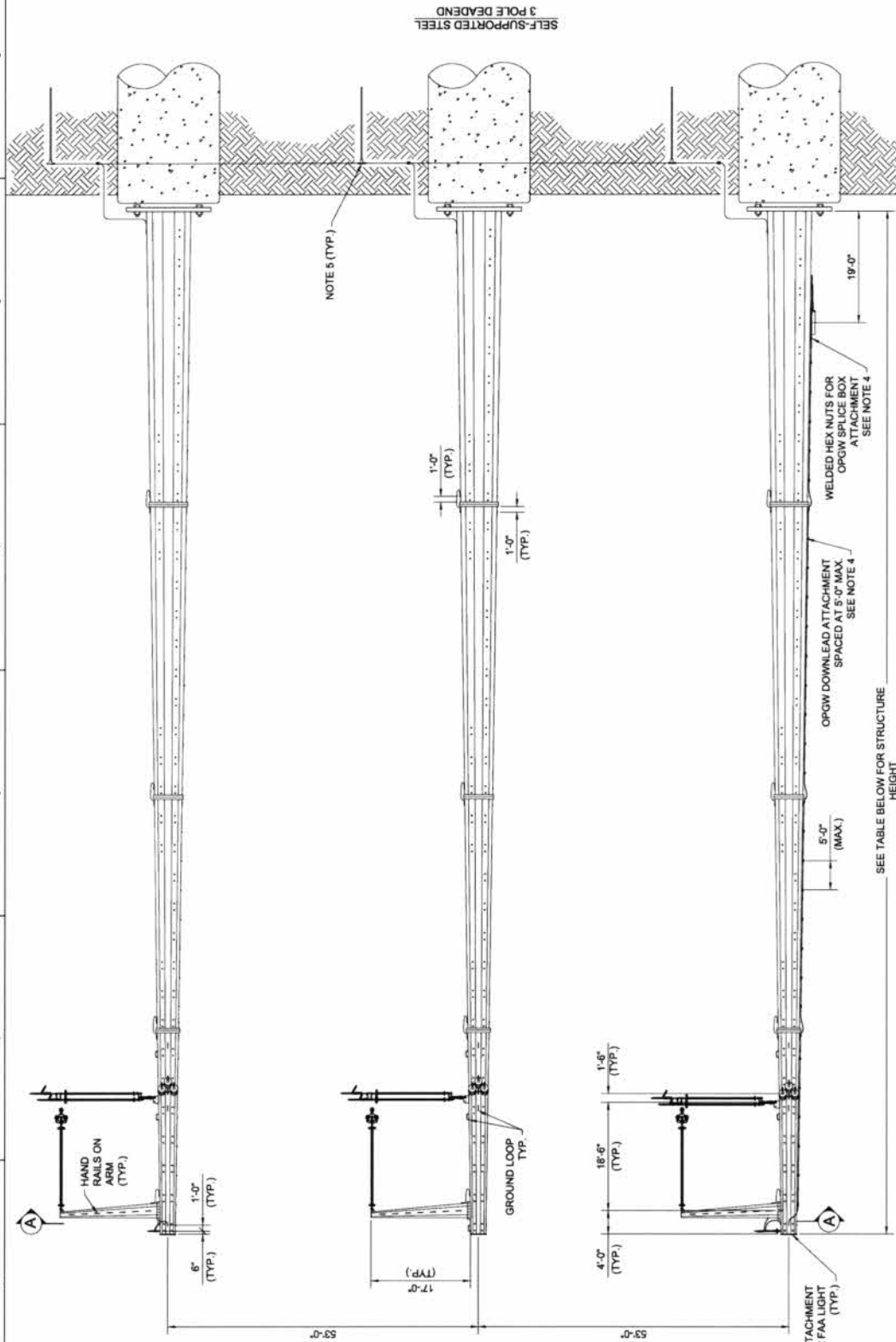
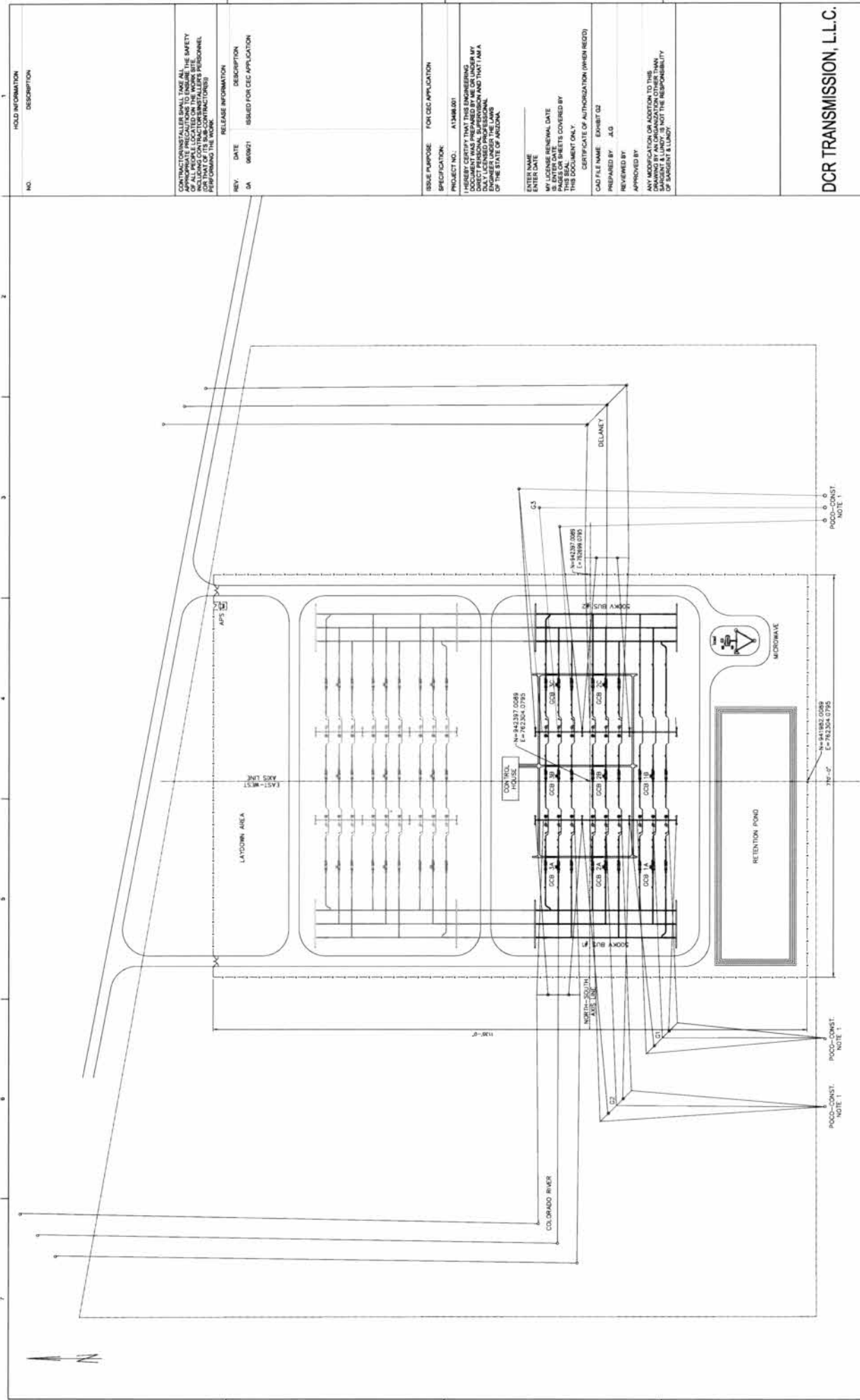


Exhibit G-2

**Switchyard
General
Arrangement**



NOT FOR
CONSTRUCTION

PRELIMINARY

LEGEND: _____
PROPERTY BOUNDARY

1987

CONSTRUCTION NOTES:

1. POCO - POINT OF CHANGE OF OWNERSHIP SHALL BE THE FIRST STRUCTURE OUTSIDE THE TRANSMISSION OPERATOR'S PROPERTY LINE. INTERCONNECTING CUSTOMER SHALL OWN THE STRUCTURE AND ALL EQUIPMENT AND MATERIALS NECESSARY TO CONNECT VIA A JUMPER TO THE T.O.'S CONDUCTOR AND FIBER OPTIC TERMINATIONS ON THE IC'S STRUCTURE

GENERAL NOTES:

1. ALL WORK DONE BY CONTRACTOR/INSTALLER PURSUANT TO THIS DRAWING SHALL

(A) CONFORM TO THE GOVERNING CONTRACT DOCUMENTS
(B) BE PERFORMED EXCLUSIVELY BY ITS TRAINED, COMPETENT PERSONNEL OR, WHERE PERMITTED, THAT OF ITS SUBCONTRACTOR(S)
(C) COMPLY WITH ALL APPLICABLE SAFETY LAWS, REGULATIONS, PROGRAMS AND PRACTICES TO ENSURE THE SAFETY OF ALL PEOPLE LOCATED ON THE WORK SITE, INCLUDING THE CONTRACTOR'S/INSTALLER'S PERSONNEL

2. UNDERGROUND OR EMBEDDED UTILITIES (MAY) EXIST WITHIN THE AREA OF AND ADJACENT TO THE LIMITS OF THE WORK. THE LOCATION OR IDENTIFICATION OF SUCH UTILITIES HAS NOT BEEN VERIFIED BY OWNER OR BY SAL. CONTRACTOR/INSTALLER IS RESPONSIBLE FOR FIELD LOCATING AND IDENTIFYING UNDERGROUND AND EMBEDDED UTILITIES AND ANY OTHER UNDERGROUND AND EMBEDDED UTILITY DIMENSIONS.

3. REFERENCES USED HAVE BEEN OBTAINED ON EXCAVATION FOUNDATION FOUNDATION DRAWINGS AND HAVE BEEN PROVIDED TO ASSIST THE CONTRACTOR/INSTALLER IN THE FIELD LOCATING EXISTING UTILITIES AND OTHER POTENTIAL/EMBEDDED OR EMBEDDED INTERFERENCES. THESE REFERENCES ONLY SHOW THE APPROXIMATE LOCATION OF POTENTIAL UNDERGROUND OR EMBEDDED UTILITIES AND MAY NOT INDICATE OR REFLECT ALL EXISTING UNDERGROUND OR EMBEDDED UTILITIES OR THEIR ACTUAL LOCATIONS.

4. REFERENCES IDENTIFIED SHALL NOT SUBSTITUTE FOR THE CONTRACTOR'S/INSTALLER'S OBLIGATION TO FIELD LOCATE ANY UNDERGROUND OR EMBEDDED UTILITIES OR INTERFERENCE THAT MAY AFFECT THE WORK.

5. DUE CAUTION SHALL BE TAKEN DURING ANY EXCAVATION/FOUNDATION/DEMOLITION WORK WITHIN THE AREA OF AND ADJACENT TO THE LIMITS OF THE WORK DUE TO POSSIBLE INTERFERENCES THAT MAY NOT BE REFLECTED ON THE REFERENCES IDENTIFIED.

SHEET	1	OF	1
-------	---	----	---

DCR TRANSMISSION, L.L.C.

PROJECT

DCRT SWITCHYARD
CIELO AZUL

DRAWING TITLE	500 KV GENERAL ARRANGEMENT
---------------	-------------------------------

1	
HOLD INFORMATION	
NO.	DESCRIPTION

CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PEOPLE LOCATED ON THE WORK SITE INCLUDING CONTRACTOR/INSTALLER'S PERSONNEL (OR THAT OF ITS SUB-CONTRACTOR(S)) PERFORMING THE WORK.

REV.	DATE	DESCRIPTION
0A	06/09/21	ISSUED FOR CEC APPLICATION

ISSUE PURPOSE:	FOR CEC APPLICATION
SPECIFICATION:	

PROJECT NO.: A13498.001

I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT PERSONAL SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF ARIZONA.

ENTER NAME
ENTER DATE

MY LICENSE RENEWAL DATE
IS ENTER DATE
PAGES OR SHEETS COVERED BY
THIS SEAL
THIS DOCUMENT ONLY.

CERTIFICATE OF AUTHORIZATION (WHEN REQ'D)	
CAD FILE NAME	EXHIBIT Q2
PREPARED BY	J.G.
REVIEWED BY	
APPROVED BY	

ANY MODIFICATION OR ADDITION TO THIS
DRAWING BY AN ORGANIZATION OTHER THAN
SARGENT & LUNDY, IS NOT THE RESPONSIBILITY
OF SARGENT & LUNDY.

**CIELO AZUL SWITCHYARD PROJECT
APPLICATION FOR CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY**

EXHIBIT H: EXISTING PLANS/LAND USE

Per A.A.C. R14-3-219, Exhibits to Application, Exhibit H of an application for a Certificate of Environmental Compatibility must consider the following:

“To the extent applicant is able to determine, state the existing plans of the state, local government and private entities for other developments at or in the vicinity of the proposed site or route.”

The La Paz County Land Conveyance Environmental Assessment (“EA”) included review of land use authorizations and access. The John D Dingell, Jr. Conservation, Management, and Recreation Act (Dingell Act) was signed into law on March 12, 2019. The Dingell Act directs the Secretary of the Interior, to convey approximately 5,900 acres of BLM-administered lands at fair market value to La Paz County, Arizona as soon as practicable. The conveyance of lands is subject to valid existing rights, including rights-of-way, as specified in the Dingell Act. Section 1008(b) (1) of the Dingell Act exempts the conveyance from the land use planning requirements of Sections 202 and 203 of the Federal Land Management Policy Act. The County would succeed the United States in matters relating to the management of these rights. Lands conveyed to the County would no longer be managed as public lands. The requirement for the BLM to convey approximately 5,900 acres of lands to La Paz County was completed with the intent of using the land for economic development and renewable electricity generation opportunities.

In keeping with the purpose of the land conveyance, DCR Transmission, L.L.C., has secured a 55-acre parcel from La Paz County for the Cielo Azul Project. In an email dated May 5, 2021, La Paz County Administrator Megan Spielman confirmed that a Special Use Permit would not be required for the Project. As noted above, the intended use of the Cielo Azul Project is consistent with County planning.

**CIELO AZUL SWITCHYARD PROJECT
APPLICATION FOR CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY**

**EXHIBIT I: NOISE, RADIO,
AND TELEVISION INTERFERENCE**

SUMMARY MEMORANDUM

Per A.A.C. R14-3-219, Exhibits to Application, Exhibit I of an application for a Certificate of Environmental Compatibility must consider the following:

“Describe the anticipated noise emission levels and any interference with communication signals which will emanate from the proposed facilities.”

This memorandum provides a summary of potential Project effects to these resources within and near the Project Area. Note that references to “Exhibits” refer to other exhibits to the CEC application.

I. NOISE EMISSIONS

A noise study was prepared for the Ten West Link, focusing on the proposed transmission line which runs along I-10 near the Cielo Azul Project area, where existing noise levels range from <35 to 75 A-weighted decibels (“dBA”).

Noise impacts for Ten West Link were evaluated within a 4,000-foot-wide corridor encompassing the transmission line. Noise-sensitive receptors (“NSRs”) along the transmission line corridor are primarily composed of residential areas, places of worship, trailer and recreational vehicle parks, and long-term visitation areas on BLM land. There are no residential areas or NSRs in the Cielo Azul Project vicinity.

Noise impacts from the Project are expected to be negligible (i.e., no measurable change in current conditions) to minor in magnitude (i.e., a small, but measurable change in current conditions) and will be below the maximum noise level identified by the Ten West Link noise study.

The Cielo Azul Project does not contain a large power transformer, and the switchyard noise will come mainly from smaller distribution transformers, a back-up station generator, and cooling systems of such devices. The Project will utilize equipment that shall meet the National Electrical Manufacturers Association (“NEMA”) standards using audible sound level test procedures and shall be below the maximum A-weighted decibels as indicated above.

2. COMMUNICATIONS INTERFERENCE

As with the Ten West Link Transmission Line, the Cielo Azul Project would operate under Federal Communications Commission (“FCC”) regulations, which require that best engineering principles be used to guard against harmful interference to authorized radio users from the transmission line and Project elements. As with all higher voltage transmission lines (345 kV and above), potential radio and television interference from the Ten West Link was therefore considered in the design of the Cielo Azul Project. The Project has been located to minimize the potential for communications interference. In the event a temporary interference occurs, such as during construction, effects would be limited in space and duration, and they would be remedied by the operator.

**CIELO AZUL SWITCHYARD PROJECT
APPLICATION FOR CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY**

EXHIBIT J: SPECIAL FACTORS

Per A.A.C. R14-3-219, Exhibits to Application, Exhibit J of an application for a Certificate of Environmental Compatibility must consider the following:

“Describe any special factors not previously covered herein, which applicant believes to be relevant to an informed decision on its application.”

This memorandum provides a summary of public outreach efforts for the Cielo Azul Project. Note that references to “Exhibits” refer to other exhibits to the CEC application.

- Exhibit J-1:** La Paz County Administrator Confirmation of Zoning for Cielo Azul Project
Exhibit J-2: Screenshot of Cielo Azul Project Website
-

Extensive public involvement activities for Ten West Link were initiated by DCR Transmission, L.L.C. (“DCRT”) and the BLM in June 2016 and continued through 2019 to notify and educate the public, agencies, community leaders, and other affected stakeholders of the need and benefits of the transmission line and to allow participation throughout the environmental planning process. The purpose of the Ten West Link transmission line, to facilitate the development of renewable energy projects, was integral to the public outreach efforts for the transmission line.

For the Cielo Azul Project, DCRT has developed an informational website available to the public (<https://cieloazulswitchyard.com>).

Exhibit J-1

**La Paz County
Administrator
Confirmation of
Zoning**

From: [Megan Spielman](#)
To: [Randy Schulze](#)
Subject: RE: Cielo Azul Project - Confirmation of zoning
Date: Tuesday, May 25, 2021 11:04:23 AM

Hi Randy,

I am happy to confirm that no special use agreement is needed from for the Cielo Azul Project.

Thank you,

Megan Spielman
La Paz County Administrator

From: Randy Schulze <rschulze@cbxinternational.net>
Sent: Monday, May 24, 2021 12:13 PM
To: Megan Spielman <mspielman@lapazcountyz.org>
Subject: Cielo Azul Project - Confirmation of zoning

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Dear Megan,

I believe t hat we briefly discussed the current zoning of the Cielo Azul project site and the fact that the project does not need a special use permit from the county. It would be very helpful for us if you could confirm that a Special Use Permit for the Cielo Azul Project is not required from La Paz County. Thank you.

Regards,

Randy

signature_2008194062



Exhibit J-2

**Screenshot of
Cielo Azul
Project Website**

Cielo Azul Switchyard

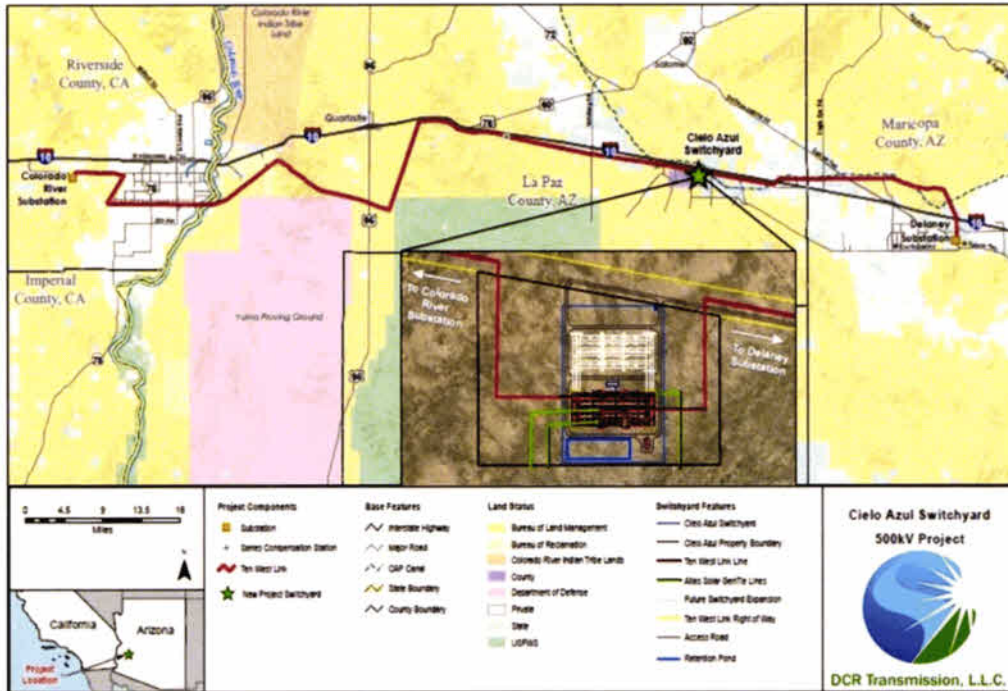
Project Description

Cielo Azul switchyard ("Cielo Azul" or "the Project") will be a six-bay, 500 kilovolt ("kV") air-insulated switchyard with circuit breakers arranged in a highly-reliable breaker-and-a-half configuration. The Project will facilitate the electrical interconnection of solar and electrical energy storage facilities located in the vicinity of the Project in La Paz County Arizona to the bulk power transmission network via to the Ten West Link 500 kV transmission line ("Ten West Link").

Project Location

The Cielo Azul switchyard will be located in La Paz County, Arizona, approximately 0.5 miles southeast of mile marker 58 on Interstate 10 (I-10). DCRT has secured a 55-acre Right-of-Way from La Paz County for the proposed Project.

Proposed Project Location and Layout



1

Project Need & Benefit

The purpose of the Project is to facilitate the interconnection of the Atlas Solar project and other future generation projects proposing to interconnect to the bulk electric grid via the Ten West Link, thereby providing new reliable and cost-effective renewable energy to the southwestern United States. In the absence of this Project, the proposed solar plus electrical energy storage projects in La Paz County, AZ would not be able to connect to the bulk transmission network in an efficient and effective manner and such development in this area would stifle due to lack of adequate transmission infrastructure. As such, among other benefits, the Project's construction and interconnection with Ten West Link brings substantial value to the economics, adequacy, and reliability of Arizona's energy supply.

Project Schedule

Secure Land ROW from La Paz County: December 2020
Complete 50% Engineering: May 2021
File CEC Application: July 2021
Siting Committee Hearings: August 31 - September 3, 2021
Complete Engineering: September 2021
Secure Construction Partner: September 2021
Order Long Lead-Time Items: September 2021
Receive CEC from ACC: October 2021
Start Construction: January 2022
Commissioning & Testing: Q3-Q4 2022
Full Commercial Operation: Q4 2022

Project Schedule subject to change

Contact Us

4742 N 24th Street, Suite 300, Phoenix, AZ 85016
+1.844.836.9378
email: info@CieloAzulSwitchyard.com

Copyright © 2021 Cielo Azul Switchyard - All Rights Reserved.